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HYDROLOGICAL MEMORANDUM No 11

infall over the areas of the Cheshire, Mersey, [illegible] Lancashire and Cumberland River Boards 1916—1950

by

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HYDROLOGICAL MEMORANDA NO. 11

Rainfall over the areas of the Cheshire, Mersey, Lancashire and Cumberland River Boards 1916-1950.

1. Rainfall, 1916-1950;

1.1. Introduction. The estimation of standard-period averages for the months or for the year, is carried out in three stages; the selection of sound, homogeneous records complete for the 35 years, 1916-1950, which provide arithmetic means of monthly and annual rainfall, the basic values for all other work; the estimation of standard-period, annual averages for short-period stations; the estimation of standard-period, monthly averages for stations in the second group, where these are needed for special purposes.

A detailed account of the methods developed and used in the Meteorological Office (M.O.3) to estimate standard-period averages from short-period records, is given in Hydrological Memoranda No. 5.

It is possible to process the data in a number of ways but the maps and tables are presented here in the simplest, most precise forms in order to be of use to a wide range of enquirers.

1.2. The Primary Survey, for Great Britain and Northern Ireland, of stations with complete records during 1916-1950, included some cases where the site had been changed to one with a better exposure and observations from both sites had been recorded for a few years. Attempts were made to amend the earlier readings by comparison of the data during a period of overlap, in order to have a set of values from 1916, to the date of the change, which would be representative of the later, and better, record. But since the earlier exposures were usually unsatisfactory (being over-exposed or over-sheltered), the results were mostly erratic and the amended sets of values were not homogeneous. In a few cases, small breaks in a long record were completed by using estimated values, based on a nearby station, with or without the use of a modifying factor.

Of the many records examined, monthly and annual averages were accepted for 85 stations, divided amongst the River Board areas as follows: 9 for the Cheshire River Board, 31 each for the Mersey and Lancashire River Boards and 14 for the Cumberland River Board. The accepted values (in inches), together with the proportions (per cent) of each monthly average to the annual average, are given in Table I together with the altitude and the National Grid reference for each station. Most of these averages were included in H.M.S.O. publication, M.O.635, "Averages of Rainfall for Great Britain and Northern Ireland, 1916-1950", some were omitted because other stations were so near.

The percentage proportion of monthly averages to the annual averages for the long-period stations were used to draw a series of twelve monthly maps from which it is possible to estimate the percentage of average annual rainfall, for any place, for each month of the year. These maps are shown as Figure 1. Values estimated for a few points between the isopercental lines have been added to give a clearer indication of the variations from place to place. The points chosen are not necessarily the same for each map.

/1.3.

1.3. The Secondary Survey of short-period stations was undertaken next, using records up to the time of the survey, usually into the late 1950's. Long-period stations, whose averages had been rejected from the Primary Survey because the record was not homogeneous, were examined again and averages were estimated for the later (and usually improved) part of the series of observations. Averages based on data for less than 5 years were not usually accepted for publication. A list of the accepted averages, for the short-period stations, is given in Table II together with the altitude and National Grid reference for each. The stations are listed in an order based on natural drainage areas which will be used for the first time in British Rainfall, 1961.

These averages, together with the long-period averages listed in Table I, were plotted on Ordnance Survey Maps (scale 4 miles to the inch), and used to draw the lines of average annual rainfall, 1916-1950. The map is shown as Figure 2. The Secondary Survey is frequently revised for special areas using the most up-to-date observations for relatively new stations and the map is subject to revision from time to time. The re-drawing of the isohyets usually results in greater detail and perhaps a clearer definition of a wet area as more and more observations become available from improved River Board networks of rain-gauges. Drastic changes are not expected. In Tables I, II and III with a few exceptions the averages quoted are for records still being maintained in 1963.

1.4. Monthly Averages for a further group of stations were next estimated for use in the Monthly Weather Report and for enquiries. For this purpose some stations were chosen from those listed in Table II to supplement those listed in Table I. To find the monthly averages, the monthly proportions (per cent of annual average) were chosen from the equipercental maps (see Fig. 1) so that the total for the twelve months was 100. These monthly percentages were then used to apportion the annual average (in inches) amongst the months. The results are given in Table III.

1.5. Daily Rainfall, 1916-1950. Eight of the initial 85 records which were accepted for the Primary Survey (1.2.) were analysed further. These records had regular daily entries for the 24-hour period, 0900 to 0900, for each of the 35 years, 1916-1950. Table IVa gives for each of the stations the 35-year totals for each day of the year (in inches). Table IVb gives 1/35 of all possible totals from .17 in. to 24.67 in., thus providing a reduction table for the values in IVa to give average daily falls from "trace" to .70 in. For 29 February the reduction factor is, of course, 1/9.

These daily averages can be re-grouped as 5-day means, 7-day means, consecutive or sliding means or in whatever form suits a specific requirement.

2. Frequencies of Daily Rainfall, 1916-1950. The same set of daily values used for Table IVa were re-grouped to give frequency tables with intervals of .01 inch. These have been re-arranged in Table V, to give accumulated frequencies with intervals of .10 in. up to 2.50 in. and a wider grouping above this.

3. Extremes of Rainfall. The records for the 35-year period, 1916-1950, for the stations used in Tables IV and V were also used to find maximum and minimum values for the year and for each month and also maximum daily values for each month. These maxima and minima are given in Table VI and Table VII. Additional extremes are given in these tables to cover the 50-year period, 1911-1960.

/Appendix I.

Appendix I.

Intense Falls. Falls of 2 hours or less, which have been recorded in British Rainfall and rank as "noteworthy", "remarkable" or "very rare", are listed in Appendix I.

Appendix II.

Heavy Daily Falls. Falls of 5.00 inches or more for the rainfall day, 0900 to 0900, have been listed for the period 1865 to 1960.

Meteorological Office
Bracknell, Berkshire.

H. ROWSELL

June, 1963.

TABLE I. Monthly and Annual Averages of Rainfall (in inches), 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas

Cheshire River Board

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	Year	
Cheshire	Bidston Observatory	198	SJ(33)287897	2.56	1.93	1.64	1.69	2.26	1.98	2.77	3.13	2.63	3.01	2.78	2.63	29.01	Inch
				8.8	6.6	5.7	5.8	7.8	6.8	9.5	10.8	9.1	10.4	9.6	9.1	100.0	%
"	Hooton Waterworks	97	SJ(33)351780	2.76	2.04	1.81	1.84	2.39	2.14	3.08	3.11	2.90	3.19	2.99	2.91	31.16	Inch
				8.9	6.5	5.8	5.9	7.7	6.9	9.9	10.0	9.3	10.2	9.6	9.3	100.0	%
"	Dorfold Hall	190	SJ(33)634524	2.85	2.17	1.82	1.94	2.42	2.03	2.91	2.96	2.54	3.14	2.96	2.79	30.53	Inch
				9.3	7.1	6.0	6.4	7.9	6.7	9.5	9.7	8.3	10.3	9.7	9.1	100.0	%
"	Reaseheath Hall	130	SJ(33)648542	2.71	2.03	1.75	1.84	2.26	1.92	2.74	2.82	2.44	2.98	2.84	2.62	28.95	Inch
				9.4	7.0	6.0	6.4	7.8	6.6	9.5	9.7	8.4	10.3	9.8	9.1	100.0	%
"	Northwich	47	SJ(33)656729	3.01	2.17	1.79	1.90	2.29	2.25	2.85	3.08	2.75	3.14	2.94	2.81	30.98	Inch
				9.7	7.0	5.8	6.1	7.4	7.3	9.2	9.9	8.9	10.1	9.5	9.1	100.0	%
"	Middlewich	138	SJ(33)709657	2.64	2.02	1.64	1.76	2.23	1.96	2.75	2.87	2.47	2.85	2.75	2.49	28.43	Inch
				9.3	7.1	5.8	6.2	7.8	6.9	9.7	10.1	8.7	10.0	9.7	8.7	100.0	%
"	Bostock Hall	138	SJ(33)675684	2.90	2.20	1.77	1.89	2.30	2.14	2.93	3.09	2.66	3.06	2.99	2.70	30.63	Inch
				9.5	7.2	5.8	6.2	7.5	7.0	9.5	10.1	8.7	10.0	9.7	8.8	100.0	%
"	Lostock Gralam.	75	SJ(33)682743	2.91	2.14	1.77	1.89	2.30	2.17	2.78	3.04	2.69	3.08	2.89	2.72	30.38	Inch
				9.6	7.0	5.8	6.2	7.6	7.1	9.2	10.0	8.9	10.1	9.5	9.0	100.0	%
"	Winnington	65	SJ(33)643747	2.93	2.11	1.76	1.87	2.21	2.14	2.73	3.09	2.71	3.13	2.91	2.73	30.32	Inch
				9.7	7.0	5.8	6.2	7.3	7.0	9.0	10.2	8.9	10.3	9.6	9.0	100.0	%

TABLE I. Monthly and Annual Averages of Rainfall (in inches), 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas (continued)

Mersey River Board

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	Year	
Cheshire	Woodhead Reservoir	665	SK(43)078993	5.12	4.03	3.00	3.38	3.09	3.18	4.30	4.51	4.23	5.04	5.18	4.54	49.60	Inch
				10.3	8.1	6.1	6.8	6.2	6.4	8.7	9.1	8.5	10.2	10.4	9.2	100.0	%
"	Rhodes Wood Reservoir	545	SK(43)042982	4.82	3.80	2.82	3.16	3.06	3.22	4.06	4.15	3.89	4.56	4.77	4.22	46.53	Inch
				10.3	8.2	6.1	6.8	6.6	6.9	8.7	8.9	8.4	9.8	10.2	9.1	100.0	%
"	Brushes Filters	615	SJ(33)997982	4.24	3.38	2.45	2.72	2.88	3.02	4.15	4.14	3.67	4.19	4.22	3.78	42.84	Inch
				9.9	7.9	5.7	6.3	6.7	7.0	9.7	9.7	8.6	9.8	9.9	8.8	100.0	%
"	Arnfield Reservoir	512	SK(43)012972	4.22	3.40	2.46	2.69	2.73	2.89	3.91	3.78	3.45	4.10	4.23	3.77	41.63	Inch
				10.1	8.2	5.9	6.5	6.6	6.9	9.4	9.1	8.3	9.8	10.2	9.0	100.0	%
Derbyshire	Swineshaw Waterworks	733	SK(43)044958	4.58	3.63	2.75	2.82	2.92	3.04	3.84	3.82	3.53	4.35	4.53	4.00	43.81	Inch
				10.5	8.3	6.3	6.4	6.7	6.9	8.8	8.7	8.1	9.9	10.3	9.1	100.0	%
S.Lancashire	Swineshaw Moor	1340	SE(44)010008	4.87	3.81	2.68	3.02	3.16	3.50	4.51	4.89	4.19	4.81	4.80	4.33	48.57	Inch
				10.0	7.9	5.5	6.2	6.5	7.2	9.3	10.1	8.6	9.9	9.9	8.9	100.0	%
Cheshire	Stalybridge, Market Ground	373	SJ(33)964983	4.09	3.14	2.30	2.43	2.67	2.89	3.71	3.77	3.36	3.84	3.99	3.59	39.78	Inch
				10.3	7.9	5.8	6.1	6.7	7.3	9.3	9.5	8.4	9.7	10.0	9.0	100.0	%
S.Lancashire	Ashton-under-Lyne, Henrietta St.	394	SJ(33)940995	4.01	3.05	2.29	2.35	2.62	2.89	3.66	3.75	3.32	3.85	3.87	3.53	39.19	Inch
				10.2	7.8	5.8	6.0	6.7	7.4	9.3	9.6	8.5	9.8	9.9	9.0	100.0	%
Cheshire	Godley Reservoir	488	SJ(33)967954	3.61	2.92	2.15	2.22	2.61	2.73	3.60	3.48	3.15	3.62	3.60	3.21	36.90	Inch
				9.8	7.9	5.8	6.0	7.1	7.4	9.8	9.4	8.5	9.8	9.8	8.7	100.0	%
S.Lancashire	Fallowfied, Platt Fields Pk.	118	SJ(33)852943	3.19	2.37	1.93	1.92	2.50	2.36	3.12	3.38	2.86	3.37	3.30	2.88	33.18	Inch
				9.6	7.1	5.8	5.8	7.5	7.1	9.4	10.2	8.6	10.2	10.0	8.7	100.0	%

TABLE I. Monthly and Annual Averages of Rainfall (in inches), 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas (continuod)

Mersey River Board (contd.)

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year	
S.Lancashire	Chorlton-cum-Hardy S. Works	95	SJ(33)807931	3.04	2.26	1.84	1.82	2.41	2.21	2.94	3.24	2.78	3.33	3.16	2.83	31.86	Inch
				9.5	7.1	5.8	5.7	7.6	6.9	9.2	10.2	8.7	10.5	9.9	8.9	100.0	%
"	Clowbridge Reservoir No.2	930	SD(34)828278	5.75	4.24	3.29	3.35	3.38	3.40	4.49	5.61	4.98	5.97	5.97	5.38	55.81	Inch
				10.3	7.6	5.9	6.0	6.1	6.1	8.0	10.1	8.9	10.7	10.7	9.6	100.0	%
"	Clowbridge Reservoir No.1	930	SD(34)824281	5.39	3.99	3.11	3.15	3.17	3.18	4.21	5.29	4.69	5.62	5.61	5.06	52.47	Inch
				10.3	7.6	5.9	6.0	6.0	6.1	8.0	10.1	8.9	10.7	10.7	9.7	100.0	%
"	Calf Hey	800	SD(34)750222	6.28	4.38	3.43	3.45	3.39	3.45	4.51	5.64	5.06	6.12	5.94	5.63	57.28	Inch
				11.0	7.6	6.0	6.0	5.9	6.0	7.9	9.9	8.8	10.7	10.4	9.8	100.0	%
"	Holden Wood No.2	670	SD(34)766227	6.06	4.51	3.33	3.34	3.33	3.38	4.44	5.43	4.84	5.86	5.97	5.61	56.10	Inch
				10.8	8.0	5.9	6.0	5.9	6.0	7.9	9.7	8.6	10.5	10.7	10.0	100.0	%
"	Holden Wood No.1	690	SD(34)774223	6.30	4.67	3.44	3.43	3.32	3.45	4.50	5.54	4.92	6.12	6.19	5.76	57.64	Inch
				10.9	8.1	6.0	6.0	5.8	6.0	7.8	9.6	8.5	10.6	10.7	10.0	100.0	%
"	Gin Hall No. 1	475	SD(34)805144	4.91	3.78	2.81	2.76	2.93	2.92	3.74	4.77	4.11	5.18	4.99	4.62	47.52	Inch
				10.3	8.0	5.9	5.8	6.2	6.1	7.9	10.0	8.7	10.9	10.5	9.7	100.0	%
"	Gin Hall No. 2	475	SD(34)807141	4.96	3.78	2.87	2.80	3.01	2.93	3.75	4.80	4.10	5.19	5.05	4.65	47.89	Inch
				10.4	7.9	6.0	5.9	6.3	6.1	7.8	10.0	8.6	10.8	10.5	9.7	100.0	%
"	Nowhey S. Works	513	SD(34)933112	4.66	3.59	2.71	2.66	2.96	2.84	3.86	4.39	3.83	4.75	4.74	4.28	45.27	Inch
				10.3	7.9	6.0	5.9	6.5	6.3	8.5	9.7	8.5	10.5	10.5	9.4	100.0	%
"	Spring Mill Reservoir	697	SD(34)875168	5.84	4.48	3.27	3.25	3.37	3.36	4.57	5.52	4.77	5.91	5.88	5.24	55.46	Inch
				10.5	8.1	5.9	5.9	6.1	6.1	8.2	10.0	8.6	10.6	10.6	9.4	100.0	%

TABLE I. Monthly and Annual Averages of Rainfall (in inches), 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas (continued)
Mersey River Board (continued)

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year	
S.Lancashire	Entwistle	700	SD(34)724173	5.88	4.33	3.23	3.26	3.51	3.55	4.50	5.59	5.11	6.11	6.02	5.32	56.41	Inch
				10.4	7.7	5.7	5.8	6.2	6.3	8.0	9.9	9.1	10.8	10.7	9.4	100.0	%
"	Heaton Reservoir	500	SD(34)687096	4.67	3.40	2.72	2.71	3.04	3.08	3.97	4.89	4.24	5.01	4.74	4.38	46.85	Inch
				10.0	7.3	5.8	5.8	6.5	6.6	8.5	10.4	9.0	10.7	10.1	9.3	100.0	%
"	Knott Hill Reservoir	605	SD(34)958014	4.16	3.22	2.46	2.54	2.88	3.09	3.89	4.17	3.65	4.13	4.14	3.78	42.11	Inch
				9.9	7.7	5.9	6.0	6.8	7.3	9.2	9.9	8.7	9.8	9.8	9.0	100.0	%
"	Manchester, Hullard Park	100	SJ(33)823962	3.44	2.51	1.94	2.05	2.44	2.37	3.12	3.62	3.04	3.61	3.43	3.14	34.71	Inch
				9.9	7.2	5.6	5.9	7.0	6.8	9.0	10.4	8.8	10.4	9.9	9.1	100.0	%
"	Urmston S. Works	72	SJ(33)756962	3.31	2.32	1.91	1.91	2.44	2.22	2.94	3.47	3.02	3.57	3.44	3.03	33.58	Inch
				9.9	6.9	5.7	5.7	7.3	6.6	8.8	10.3	9.0	10.6	10.2	9.0	100.0	%
"	Leigh S. Works	67	SJ(33)661993	3.27	2.34	1.95	1.91	2.48	2.32	3.05	3.59	3.16	3.70	3.55	3.08	34.40	Inch
				9.5	6.8	5.7	5.5	7.2	6.7	8.9	10.4	9.2	10.8	10.3	9.0	100.0	%
Cheshire	Macclesfield	500	SJ(33)911741	3.37	2.73	2.06	2.43	2.51	2.70	3.67	3.55	3.10	3.62	3.42	3.17	36.33	Inch
				9.3	7.5	5.7	6.7	6.9	7.4	10.1	9.8	8.5	10.0	9.4	8.7	100.0	%
S.Lancashire	Liverpool, Queens Drive	119	SJ(33)361950	3.21	2.35	2.00	2.04	2.60	2.28	3.22	3.72	3.22	3.71	3.46	3.25	35.06	Inch
				9.1	6.7	5.7	5.8	7.4	6.5	9.2	10.6	9.2	10.6	9.9	9.3	100.0	%
"	Bickerstaffe Pumping Station	127	SD(34)419036	3.22	2.27	1.88	1.96	2.55	2.26	3.24	3.95	3.33	3.88	3.64	3.29	35.47	Inch
				9.1	6.4	5.3	5.5	7.2	6.4	9.1	11.1	9.4	10.9	10.3	9.3	100.0	%
"	Springfield Pumping Station	69	SD(34)388046	3.24	2.29	1.90	1.92	2.49	2.32	3.21	3.81	3.31	3.85	3.61	3.26	35.21	Inch
				9.2	6.5	5.4	5.4	7.1	6.6	9.1	10.8	9.4	10.9	10.3	9.3	100.0	%
"	Formby, Hightown	25	SD(34)294044	2.96	2.18	1.80	1.88	2.35	2.08	2.96	3.22	3.04	3.47	3.24	2.92	32.10	Inch
				9.2	6.8	5.6	5.9	7.3	6.5	9.2	10.0	9.5	10.8	10.1	9.1	100.0	%

TABLE I. Monthly and Annual Averages of Rainfall (in inches), 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas (continued)

Lancashire River Board

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year	
C.Lancashire	Lower Rivington Reservoir	440	SD(34)631126	4.02 9.7	2.91 7.0	2.43 5.9	2.26 5.5	2.73 6.6	2.71 6.6	3.71 9.0	4.41 10.7	3.80 9.2	4.36 10.5	4.20 10.2	3.75 9.1	41.29 100.0	Inch %
Yorkshire W.R.	Whitendale No.4.	830	SD(34)653558	8.23 11.4	5.59 7.7	4.20 5.8	4.19 5.8	3.75 5.2	4.51 6.2	5.87 8.1	6.89 9.5	6.77 9.4	8.08 11.2	7.10 9.8	7.17 9.9	72.35 100.0	Inch %
"	Brennand	820	SD(34)632547	7.67 11.3	5.17 7.6	4.01 5.9	3.82 5.6	3.61 5.3	4.21 6.2	5.66 8.3	6.58 9.7	6.37 9.3	7.65 11.2	6.71 9.8	6.70 9.8	68.16 100.0	Inch %
"	Footholme No.2.(formerly Dunsop House)	525	SD(34)655514	7.52 11.4	5.18 7.8	3.86 5.9	3.72 5.6	3.55 5.4	3.86 5.9	5.33 8.1	6.26 9.5	6.16 9.3	7.43 11.3	6.65 10.1	6.41 9.7	65.93 100.0	Inch %
"	Langden Brook	559	SD(34)628511	8.47 11.5	5.72 7.7	4.48 6.1	4.15 5.6	3.92 5.3	4.43 6.0	5.95 8.1	6.81 9.2	6.90 9.4	8.14 11.0	7.52 10.2	7.31 9.9	73.80 100.0	Inch %
"	Haredon Valley	563	SD(34)635503	8.02 11.2	5.53 7.7	4.36 6.1	3.97 5.5	3.82 5.3	4.33 6.0	5.93 8.2	6.82 9.5	6.85 9.5	7.93 11.0	7.32 10.2	7.02 9.8	71.90 100.0	Inch %
C.Lancashire	Swinden, Lower	745	SD(34)885334	5.19 11.0	3.81 8.0	2.99 6.3	2.93 6.2	2.90 6.1	2.83 6.0	3.66 7.7	4.53 9.6	4.03 8.5	4.94 10.4	4.96 10.5	4.59 9.7	47.36 100.0	Inch %
"	Churn Clough Reservoir	790	SD(34)786382	4.66 9.8	3.72 7.8	2.62 5.5	2.72 5.7	2.82 5.9	3.18 6.7	4.19 8.8	4.99 10.5	4.49 9.4	5.13 10.8	4.78 10.1	4.28 9.0	47.58 100.0	Inch %
"	Stonyhurst	377	SD(34)692388	4.95 10.4	3.64 7.6	2.62 5.5	2.68 5.6	2.79 5.8	3.05 6.4	4.06 8.5	4.93 10.3	4.58 9.6	5.31 11.1	4.73 9.9	4.43 9.3	47.77 100.0	Inch %
"	Longridge (formerly Spade Mill)	362	SD(34)618373	4.17 9.6	2.99 6.9	2.33 5.4	2.45 5.6	2.57 5.9	2.85 6.6	4.06 9.4	4.59 10.6	4.42 10.2	4.88 11.2	4.14 9.5	3.95 9.1	43.40 100.0	Inch %

TABLE I. Monthly and Annual Averages of Rainfall (in inches), 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas (continued)

Lancashire River Board (continued)

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year	
C.Lancashire	Darwen	724	SD(34)687216	5.80	4.25	3.26	3.21	3.29	3.30	4.31	5.47	4.86	5.85	5.68	5.28	54.56	Inch
				10.6	7.8	6.0	5.9	6.0	6.1	7.9	10.0	8.9	10.7	10.4	9.7	100.0	%
"	Earnsdale Reservoir	705	SD(34)670220	5.29	3.89	3.00	2.97	3.22	3.24	4.31	5.38	4.73	5.68	5.50	4.89	52.10	Inch
				10.1	7.5	5.8	5.7	6.2	6.2	8.3	10.3	9.1	10.9	10.5	9.4	100.0	%
"	Sunnyhurst Hey Reservoir	915	SD(34)677221	5.20	3.79	2.95	2.95	3.19	3.17	4.27	5.30	4.69	5.62	5.40	4.80	51.33	Inch
				10.1	7.4	5.8	5.8	6.2	6.2	8.3	10.3	9.1	10.9	10.5	9.4	100.0	%
"	Daisy Green	969	SD(34)726242	5.23	3.82	2.82	3.07	3.04	3.18	4.26	5.14	4.52	5.53	5.35	4.86	50.82	Inch
				10.3	7.5	5.5	6.1	6.0	6.3	8.4	10.1	8.9	10.9	10.5	9.5	100.0	%
"	Rivington, Gamekeepers	850	SD(34)640209	4.71	3.44	2.70	2.77	3.11	3.19	4.20	5.09	4.59	5.24	4.97	4.40	48.41	Inch
				9.7	7.1	5.6	5.7	6.4	6.6	8.7	10.5	9.5	10.8	10.3	9.1	100.0	%
"	Hutton	82	SD(34)513268	3.47	2.47	2.02	2.00	2.45	2.52	3.34	3.88	3.72	3.95	3.70	3.29	36.81	Inch
				9.4	6.7	5.5	5.4	6.7	6.9	9.1	10.5	10.1	10.7	10.1	8.9	100.0	%
"	Preston, Moor Park	108	SD(34)537311	3.80	2.67	2.18	2.21	2.63	2.67	3.58	4.15	3.86	4.25	3.89	3.58	39.47	Inch
				9.6	6.7	5.5	5.6	6.7	6.8	9.1	10.5	9.8	10.8	9.8	9.1	100.0	%
N.Lancashire	Abbeystead Reservoir	366	SD(34)563543	5.43	3.74	3.11	2.96	3.07	3.60	4.71	5.38	5.17	5.75	5.06	4.95	52.93	Inch
				10.2	7.1	5.9	5.6	5.8	6.8	8.9	10.2	9.8	10.9	9.5	9.3	100.0	%
"	Grizedale Intake	644	SD(34)541496	4.55	3.16	2.54	2.50	2.88	3.30	4.41	5.06	4.87	5.22	4.51	4.24	47.24	Inch
				9.6	6.7	5.4	5.3	6.1	7.0	9.3	10.7	10.3	11.1	9.5	9.0	100.0	%
"	Barnacre Reservoir	616	SD(34)528480	4.76	3.29	2.67	2.54	2.92	3.37	4.58	5.19	4.86	5.33	4.68	4.47	48.66	Inch
				9.8	6.8	5.5	5.2	6.0	6.9	9.4	10.7	10.0	10.9	9.6	9.2	100.0	%
"	Calder Intake	632	SD(34)544484	4.67	3.22	2.61	2.54	2.90	3.40	4.53	5.18	4.91	5.31	4.63	4.32	48.22	Inch
				9.7	6.7	5.4	5.3	6.0	7.0	9.4	10.7	10.2	11.0	9.6	9.0	100.0	%

TABLE I. Monthly and Annual Averages of Rainfall (in inches), 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas (continued)

Lancashire River Board (continued)

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year	
N.Lancashire	St.Michaels-on-Wye	26	SD(34)459410	3.65	2.48	2.03	1.98	2.45	2.53	3.41	4.02	3.81	4.23	3.72	3.55	37.86	Inch
				9.6	6.5	5.4	5.2	6.5	6.7	9.0	10.6	10.1	11.2	9.8	9.4	100.0	%
"	Weeton Reservoir	133	SD(34)395344	3.69	2.49	2.16	2.10	2.61	2.57	3.38	3.99	3.79	4.27	3.76	3.56	38.37	Inch
				9.6	6.5	5.6	5.5	6.8	6.7	8.8	10.4	9.9	11.1	9.8	9.3	100.0	%
"	Hampson-in-Ellel	145	SD(34)490541	4.01	2.61	2.19	2.12	2.56	2.73	3.62	4.29	4.05	4.44	3.88	3.67	40.17	Inch
				10.0	6.5	5.4	5.3	6.4	6.8	9.0	10.7	10.1	11.0	9.7	9.1	100.0	%
"	Heysham Harbour	36	SD(34)404601	3.81	2.48	2.18	2.02	2.61	2.47	3.21	3.80	3.94	4.17	3.76	3.50	37.95	Inch
				10.0	6.5	5.8	5.3	6.9	6.5	8.5	10.0	10.4	11.0	9.9	9.2	100.0	%
"	Morecambe	23	SD(34)431645	3.84	2.55	2.14	2.06	2.58	2.48	3.25	3.92	3.86	4.20	3.87	3.63	38.33	Inch
				10.0	6.6	5.6	5.3	6.7	6.5	8.5	10.2	10.1	10.9	10.1	9.5	100.0	%
Westmorland	Brockhole	160	NY(35)389009	8.47	5.48	4.34	3.72	3.68	3.59	4.89	5.75	6.14	7.57	7.43	7.58	68.64	Inch
				12.4	8.0	6.3	5.4	5.4	5.2	7.1	8.4	9.0	11.0	10.8	11.0	100.0	%
"	Holehird	490	NY(35)411007	8.58	5.53	4.51	3.89	3.92	3.84	5.28	6.08	6.38	7.73	7.68	7.71	71.13	Inch
				12.1	7.8	6.3	5.5	5.5	5.4	7.4	8.5	9.0	10.9	10.8	10.8	100.0	%
N.Lancashire	Poaka Beck	512	SD(34)240781	5.47	3.48	3.15	2.95	3.38	3.26	4.40	5.05	5.33	5.69	5.39	5.17	52.72	Inch
				10.4	6.6	6.0	5.6	6.4	6.2	8.3	9.6	10.1	10.8	10.2	9.8	100.0	%
"	Barrow-in-Furness S. Works	24	SD(34)216689	4.20	2.77	2.55	2.32	2.67	2.45	3.28	3.96	4.03	4.49	4.29	4.04	41.05	Inch
				10.2	6.8	6.2	5.7	6.5	6.0	8.0	9.6	9.8	10.9	10.5	9.8	100.0	%
"	Scathwaite Farm	1240	SD(34)249984	11.52	7.65	6.62	5.91	5.31	5.79	7.90	8.78	9.22	10.50	10.87	10.25	100.32	Inch
				11.5	7.6	6.6	5.9	5.3	5.8	7.9	8.7	9.2	10.5	10.8	10.2	100.0	%

TABLE I. Monthly and Annual Averages of Rainfall (in inches) 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas (continued)

Cumberland River Board

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Year	
Cumberland	Workington, Stainburn Reservoir	180	NY(35)022293	3.74	2.41	2.34	2.20	2.60	2.67	3.21	4.06	4.14	4.41	4.41	3.78	39.97	Inch
				9.4	6.0	5.8	5.5	6.5	6.7	8.0	10.2	10.4	11.0	11.0	9.5	100.0	%
"	Ravenglass	70	SD(34)083965	4.43	2.89	2.70	2.46	2.79	2.75	3.89	4.07	4.39	4.76	4.51	4.48	44.12	Inch
				10.0	6.6	6.1	5.6	6.3	6.2	8.8	9.2	10.0	10.8	10.2	10.2	100.0	%
"	Braystones	36	NY(35)008058	4.04	2.59	2.50	2.32	2.67	2.55	3.78	4.14	4.12	4.54	4.22	4.09	41.56	Inch
				9.7	6.2	6.0	5.6	6.4	6.1	9.1	10.0	9.9	10.9	10.2	9.9	100.0	%
"	Seathwaite	423	NY(35)237119	15.98	10.64	8.32	7.46	6.76	7.45	9.55	11.08	12.61	13.73	14.23	13.75	131.56	Inch
				12.1	8.1	6.3	5.7	5.1	5.7	7.3	8.4	9.6	10.4	10.8	10.5	100.0	%
"	Keswick, Derwent Island	290	NY(35)262224	6.95	4.32	3.53	3.38	3.31	3.55	4.67	5.50	5.91	6.96	6.31	6.11	60.50	Inch
				11.5	7.1	5.8	5.6	5.5	5.9	7.7	9.1	9.8	11.5	10.4	10.1	100.0	%
"	Wythburn	610	NY(35)318138	12.48	7.79	6.41	5.57	5.13	5.34	6.88	8.76	9.10	11.90	11.24	11.37	101.97	Inch
				12.2	7.6	6.3	5.5	5.0	5.2	6.8	8.6	8.9	11.7	11.0	11.2	100.0	%
"	Keswick, High Hill	254	NY(35)260238	6.68	4.20	3.43	3.28	3.20	3.33	4.39	5.05	5.61	6.79	6.12	6.02	58.10	Inch
				11.5	7.2	5.9	5.6	5.5	5.7	7.6	8.7	9.7	11.7	10.5	10.4	100.0	%
"	Chapel House Reservoir	620	NY(35)260359	4.96	3.44	2.80	2.79	2.97	3.02	4.22	4.68	4.71	5.41	4.71	4.46	48.17	Inch
				10.3	7.1	5.8	5.8	6.2	6.3	8.8	9.7	9.8	11.2	9.8	9.2	100.0	%
"	Brookfield	110	NY(35)242478	3.32	2.23	1.95	1.89	2.13	2.36	3.36	3.66	3.45	3.70	3.15	2.85	34.05	Inch
				9.7	6.5	5.7	5.6	6.3	6.9	9.9	10.7	10.1	10.9	9.3	8.4	100.0	%
Westmorland	Appleby Castle	480	NY(35)684198	4.12	2.39	2.29	2.06	2.40	2.19	3.35	3.65	3.25	3.84	3.48	3.53	36.55	Inch
				11.3	6.5	6.3	5.6	6.6	6.0	9.2	10.0	8.9	10.5	9.5	9.6	100.0	%

TABLE I. Monthly and Annual Averages of Rainfall (in inches) 1916-1950
Cheshire, Mersey, Lancashire and Cumberland River Board Areas (continued)

Cumberland River Board (continued)

County	Station	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year	
Westmorland	Patterdale Hall	480	NY(35)391163	11.77	6.99	6.20	5.27	4.89	4.76	5.76	7.38	8.38	10.65	10.45	10.55	92.75	Inch
				12.7	7.5	6.7	5.7	5.3	5.1	6.2	7.9	8.7	11.5	11.3	11.4	100.0	%
Cumberland	Hutton John	688	NY(35)439270	5.93	3.76	3.00	2.83	2.60	2.54	3.41	4.16	4.24	5.49	5.35	5.06	48.07	Inch
				12.3	7.8	6.3	5.9	5.4	5.3	7.1	8.7	8.8	11.4	10.5	10.5	100.0	%
"	Carlisle Cemetery	114	NY(35)390544	2.84	2.14	1.81	1.83	2.04	2.36	3.40	3.63	3.24	3.44	2.83	2.56	32.12	Inch
				8.8	6.7	5.6	5.7	6.4	7.3	10.6	11.3	10.1	10.7	8.8	8.0	100.0	%
"	Carlisle, Denton Holme	57	NY(35)395552	2.54	1.90	1.64	1.76	1.89	2.25	3.40	3.41	3.28	3.25	2.67	2.46	30.45	Inch
				8.3	6.2	5.4	5.8	6.2	7.4	11.1	11.2	10.8	10.7	8.8	8.1	100.0	%
"	Geltsdale, old site	778	NY(35)573536	3.48	2.44	2.30	2.32	2.48	2.70	3.93	4.25	3.60	3.88	3.46	3.14	37.98	Inch
				9.2	6.4	6.1	6.1	6.5	7.1	10.3	11.2	9.5	10.2	9.1	8.3	100.0	%

TABLE II Estimated Annual Averages of Rainfall (in inches), 1916-1950 for short-period stations.
(Cheshire, Mersey, Lancashire and Cumberland River Board Areas)

County	Station	Annual Average in.	Alt. ft.	N.G.R.
	Cheshire River Board			
Cheshire	Crosshill Reservoir	31.18	212	SJ(33)280842
"	Brenton Waterworks	32.25	91	SJ(33)295864
"	Wallasey	30.30	57	SJ(33)293932
"	Port Sunlight,Estate Nursery	32.69	50	SJ(33)336842
"	Barrowmore	28.49	114	SJ(33)474691
"	Mouldsworth P.Station	30.64	145	SJ(33)503704
"	Ellesmere Port Refinery	29.04	15	SJ(33)424759
"	Manley	33.02	300	SJ(33)515722
"	Foxhill P.Station	30.48	155	SJ(33)506748
"	Cholmondeley	30.16	291	SJ(33)553505
Shropshire	Adderley	28.73	250	SJ(33)661401
Cheshire	Audlem	29.85	214	SJ(33)656432
Staffordshire	Madeley	31.83	354	SJ(33)774442
Cheshire	Wyburbury	28.51	160	SJ(33)700498
"	Nantwich,Brookfield House	29.14	130	SJ(33)651516
"	Nantwich,Beam Bridge	29.94	120	SJ(33)651536
"	Radway Green	30.52	257	SJ(33)776542
"	Crewe Sewerage Works	29.39	125	SJ(33)684554
"	Sandyford Waterworks	32.38	249	SJ(33)567667
"	Tiresford	29.23	242	SJ(33)556612
"	Eaton Pump Station	32.49	285	SJ(33)569635
"	Bosley Reservoir	34.01	590	SJ(33)927657
"	Buglawton Hall	33.57	450	SJ(33)885644
Staffordshire	Biddulph Grange	35.28	560	SJ(33)894591
Cheshire	Congleton S.Works	31.10	247	SJ(33)853635
"	Cranage,Hall Hospital	28.47	179	SJ(33)750683
"	Mow Cop Pump Station	31.50	460	SJ(33)843577
"	Chelford	31.15	263	SJ(33)813741
"	Northwich,Marlbury Road.	30.61	96	SJ(33)649764
"	Weaverham Grange	31.90	151	SJ(33)633728
"	Delamere	32.94	250	SJ(33)556703
"	Crabtree Green	32.62	163	SJ(33)584711
"	Cuddington	32.24	200	SJ(33)597720
"	Weston Point	31.86	30	SJ(33)495815
"	Appleton	33.01	120	SJ(33)602845
	Mersey River Board			
Derbyshire	Berry Clough	54.61	1550	SK(43)029727
"	Cat and Fiddle Inn	54.28	1610	SK(43)005717
"	Goytsclough	55.83	1175	SK(43)011733
"	Goytshead	52.54	925	SK(43)012748
"	Embridge	52.34	1430	SJ(33)999764
"	Longhill	51.39	1390	SK(43)031752
"	Upper Hall	46.26	940	SK(43)017771
"	Oldfield	47.62	820	SK(43)012777
"	Blackhillgate	44.24	1190	SJ(33)997787
"	Chapel-en-le-Frith	43.22	728	SK(43)056809
"	Upper Sett	50.04	1420	SK(43)074855
"	Kinder Source	60.90	2050	SK(43)087878
"	Hollin Head	51.10	950	SK(43)064883
"	Upper Moor	50.65	1362	SK(43)067879
"	Kinder Filters	46.19	800	SK(43)054880
"	Laygatehead Moor	48.31	1530	SK(43)054894
"	Middle Moor	46.88	1170	SK(43)049887

TABLE II Estimated Annual Averages of Rainfall (in inches), 1916-1950 for short-period stations.
(Cheshire, Mersey, Lancashire and Cumberland River Board Areas)
(continued)

County	Station	Annual Average in.	Alt. ft.	N.G.R.
	Mersey River Board			
Cheshire	Longside Moss	60.97	1418	SE(44)131007
Derbyshire	Far Black Clough	59.16	1643	SK(43)127984
Cheshire	Pikenaze Moor	58.70	1148	SE(44)114004
"	Pikenaze	50.85	926	SE(44)098001
Derbyshire	Bleaklow Hill	59.69	1718	SK(43)093979
Cheshire	Upper Headon	69.83	1717	SE(44)098035
"	West Withens	63.72	1382	SE(44)114022
"	Westend Moor	61.69	1691	SE(44)086020
"	Grains Moss	65.71	1573	SE(44)068039
"	Near Broadslate	65.88	1663	SE(44)055027
"	Span Gutter	56.26	1530	SK(43)058999
"	Crowdon Meadow Clough	64.90	1425	SE(44)074025
Derbyshire	Clough Edge	56.32	1452	SK(43)066970
Cheshire	Torside Reservoir	47.07	669	SK(43)054985
"	Bottoms Reservoir	42.28	50	SK(43)024973
"	Boar Flat	52.12	1190	SE(44)020003
"	Hollingworth Hall Moor	47.79	1194	SK(43)002984
"	Arnfield Moor	53.51	1290	SK(43)033996
West Riding	Denshaw	51.65	870	SD(34)973106
"	Broadhead Noddle	54.58	857	SD(34)996102
"	Saddleworth	48.33	574	SE(44)000064
"	Greenfield Sewerage Works	45.32	499	SD(34)992043
"	Upperwood Moor	54.22	1518	SE(44)031063
"	Yeoman Hey	52.32	784	SE(44)022046
"	Ashway Moss	56.30	1581	SE(44)032046
"	Chew Blindstones	60.48	1745	SE(44)038014
"	Chew Sluice	59.54	1670	SE(44)037029
"	Chew Mount	60.30	1578	SE(44)035020
"	Chew-Great-Gruff	60.31	1650	SE(44)032013
Cheshire	Higher Swineshaw	46.35	965	SK(43)006996
South Lancashire	Denton Sewerage Works	32.67	190	SJ(33)921935
"	Denton Reservoir	36.90	306	SJ(33)913956
Cheshire	Cheadle Heath S.Works	31.10	135	SJ(33)869898
"	Disley, Higher Stoneridge	37.21	750	SJ(33)975837
"	Lyme Park	35.11	674	SJ(33)971836
"	High Lane	35.35	675	SJ(33)964847
South Lancashire	Audenshaw	37.57	300	SJ(33)913973
"	Stretford Sewerage Works	33.47	65	SJ(33)783933
Cheshire	Sale Sewerage Works	33.60	58	SJ(33)768930
"	Sale Carrington Lane	31.80	72	SJ(33)765928
South Lancashire	Sheephouse Reservoir	56.39	975	SD(34)877220
"	Cragg Reservoir	57.94	1325	SD(34)846197
"	Compe Reservoir	58.93	925	SD(34)843204
"	Cloughbottom	51.39	1025	SD(34)845269
"	Rawtenstall Cemetery	52.50	572	SD(34)813233
"	Ogden Reservoir No.2	55.73	740	SD(34)756224
"	Uglow	56.08	1090	SD(34)758206
"	Musbury Valley	56.04	750	SD(34)770212
"	Helmshore	60.60	854	SD(34)774205
"	New Hall Nurseries	50.40	800	SD(34)807197
"	Ramsbottom	61.31	418	SD(34)794169
"	Elton Reservoir	41.55	294	SD(34)792097
"	Upper Chelburn	49.87	725	SD(34)952185
"	Lower Chelburn	49.69	700	SD(34)949188

TABLE II Estimated Annual Averages of Rainfall (in inches)
1916-1950 for short-period stations.
(Cheshire, Mersey, Lancashire and Cumberland River Board Areas)
(continued)

County	Station	Annual Average in.	Alt. ft.	N.G.R.
	Mersey River Board			
South Lancashire	Blackstone Edge	49.78	1268	SD(34)966182
"	Longden End	50.61	751	SD(34)957140
"	Brushes Clough	49.48	921	SD(34)956097
"	Cold Greave	49.59	832	SD(34)967126
"	Kitcliffe	49.03	766	SD(34)961125
"	Milnrow, Butterworth Hall	47.94	512	SD(34)931124
"	Hamer Pasture Reservoir	50.32	760	SD(34)897161
"	Cowm Reservoir	58.00	762	SD(34)881185
"	Brown Lowe	57.00	1200	SD(34)684193
"	Clough	58.59	1150	SD(34)687184
"	Top O' th' Brow	60.07	935	SD(34)709170
"	Longshoot	56.67	930	SD(34)737204
"	Moorside	56.03	850	SD(34)738184
"	Wayoh	55.89	608	SD(34)733163
"	Turton Tower	54.80	584	SD(34)731153
"	Hulton Pasture	55.19	1090	SD(34)672183
"	Bromiley Heys	58.21	925	SD(34)663169
"	Hordern	58.28	1160	SD(34)664153
"	Eagley	59.04	546	SD(34)703148
"	Holden's Farm	56.01	955	SD(34)690170
"	Longworth	56.97	770	SD(34)692161
"	Delph	58.39	710	SD(34)704156
"	Springs	59.26	810	SD(34)692142
"	Smithhills Hall	49.53	510	SD(34)700118
"	Harpers Farm	47.63	872	SD(34)668114
"	Bolton, Bradshawgate	44.95	299	SD(34)721091
"	Hacken S.Works	44.96	182	SD(34)737075
"	Prestwick Reservoir	41.73	340	SD(34)812032
"	Heaton Park	42.40	325	SD(34)825043
"	Strinesdale	44.39	791	SD(34)955064
"	Old Trafford, Public Hall.	33.86	107	SJ(33)816961
"	Weaste S. Works	34.97	70	SJ(33)795980
"	Eccles S. Works	34.03	71	SJ(33)760974
"	Platt Bridge S. Works.	37.59	91	SD(34)609025
"	Atherton Cemetery	38.73	165	SD(34)666029
Cheshire	Ringway	31.57	248	SJ(33)818850
"	Altrincham, Norman's Place	32.61	150	SJ(33)764877
"	Twelve Ashes	42.32	903	SJ(33)967712
"	Trentabank	42.09	864	SJ(33)962712
"	Bottoms Reservoir	37.52	659	SJ(33)944715
"	Loadbeaters	34.77	579	SJ(33)926733
"	Prestbury S. Works	32.68	320	SJ(33)897783
"	Rainow	37.15	815	SJ(33)946759
"	Styperson House	32.67	500	SJ(33)929800
"	Nether Alderley	32.58	329	SJ(33)843764
"	Knutsford	33.06	212	SJ(33)757783
"	Dunham Massey S. Works	31.86	55	SJ(33)722877
South Lancashire	Warrington Highways Yard	33.75	43	SJ(33)603881
"	Rookery S. Works	35.19	107	SJ(33)485999
"	Windle Hall	34.35	160	SJ(33)500976
"	Prescot	35.56	282	SJ(33)473936
"	Eccleston Hill P. Station	34.36	250	SJ(33)488941
"	Winwick	34.18	115	SJ(33)605931
"	Great Sankey	32.95	65	SJ(33)552889
"	Widnes, Catherine Street	31.47	30	SJ(33)513849
"	Halewood S. Works	34.13	30	SJ(33)461854

TABLE II Estimated Annual Averages of Rainfall (in inches)
1916-1950 for short-period stations.
(Cheshire, Mersey, Lancashire and Cumberland River Board Areas)
(continued)

County	Station	Annual Average in.	Alt. ft.	N.G.R.
	Mersey River Board			
South Lancashire	Pex Hill Reservoir	34.43	228	SJ(33)502889
"	Speke	30.45	77	SJ(33)415839
"	Garston Depot	31.56	81	SJ(33)395853
"	Liverpool, Smithdown Road	33.98	135	SJ(33)391885
"	Liverpool, Lark Lane	32.15	90	SJ(33)370874
"	Liverpool, Rathbone Road	34.70	198	SJ(33)391907
"	Liverpool, Monument Place	32.97	127	SJ(33)354907
"	Litherland, Hatton Hill Park	31.14	59	SJ(33)335976
"	Liverpool, Knotty Ash	35.35	106	SJ(33)412916
"	Kirkby	34.47	48	SJ(33)400980
"	Ince Blundell	35.34	36	SD(34)322032
"	Formby, Victoria Road	33.25	10	SD(34)290084
	Lancashire River Board			
C. Lancashire	Crossens P. Station	33.44	15	SD(34)378206
"	Rufford	34.02	38	SD(34)456164
"	Horwick, Gilsbrook Spring	44.89	598	SD(34)635134
"	Worthington Waterworks	39.78	225	SD(34)580102
"	Wigan, Grammar School	36.88	123	SD(34)580062
"	Gidlow School	37.12	150	SD(34)573068
"	Billinge Waterworks	39.89	374	SD(34)525030
"	Brown Hill	46.44	727	SD(34)635157
"	Chorley Filters	42.89	430	SD(34)604171
"	Coppice Stile	44.96	879	SD(34)627191
"	Common Bank South Works	37.96	187	SD(34)565178
Yorkshire W.R.	Ribblehead	78.65	1025	SD(34)766789
"	Holden Moor No. 27	58.99	1036	SD(34)765589
"	Barnoldswick Secondary School	44.20	567	SD(34)883462
"	Tosside No. 33	53.35	880	SD(34)766563
C. Lancashire	Downham Hall	43.84	464	SD(34)782443
"	Chatburn	44.52	322	SD(34)769441
Yorkshire W.R.	White Hill No. 30	77.58	1710	SD(34)677585
"	Lamb Hill No. 3	72.48	1328	SD(34)688592
"	Greet Bridge No. 24	72.67	825	SD(34)702589
"	Saddle Hill No. 16A	79.65	1400	SD(34)690579
"	Catlow No. 4A	68.01	825	SD(34)705591
"	Collyholme No. 20	65.39	650	SD(34)716578
"	Swire Clough No. 25A	65.16	1190	SD(34)725594
"	Holme House No. 19	63.12	601	SD(34)725571
"	Dalehead No. 1	59.07	610	SD(34)733564
"	Knotteranum No. 26	68.08	1200	SD(34)737606
"	Dobdale No. 28	57.14	800	SD(34)747592
"	Bottoms, No. 6	57.85	864	SD(34)748585
"	Far Barn No. 22A	59.58	675	SD(34)746572
"	Slaidburn	62.16	629	SD(34)715549
"	Phynis No. 18	60.28	572	SD(34)712545
"	Croasdale Top No. 29	80.53	1310	SD(34)668574
"	Croasdale Valley No. 15	72.49	720	SD(34)69[illegible]557
"	Croasdale House No. 14	61.26	600	SD(34)704550
"	Cabin Hill	72.76	1559	SD(34)621563
"	Middle Knoll	73.92	1288	SD(34)653543
"	Footholme No. 1	65.22	565	SD(34)652531
"	Holdron Moss	78.70	1300	SD(34)606511
"	Hareden Fell	76.94	1300	SD(34)618493

TABLE II Estimated Annual Averages of Rainfall (in inches)
1916-1950 for short-period stations.
(Cheshire, Mersey, Lancashire and Cumberland River Board Areas)
(continued)

County	Station	Annual Average in.	Alt. ft.	N.G.R.
	Lancashire River Board			
Central Lancashire	Causeway Site	53.80	1110	SD(34)890292
"	Red Spa Moor	50.16	1175	SD(34)910352
"	Entwistle Moor Top	50.55	1245	SD(34)907335
"	Rams Clough Head	50.88	1236	SD(34)903326
"	Swinden Upper	48.59	811	SD(34)893331
"	Shedden	52.90	960	SD(34)893301
"	Cant Clough, South	53.16	903	SD(34)894306
"	Cant Clough, North	50.51	896	SD(34)890313
"	Ogden Reservoir	55.88	908	SD(34)817398
"	Blackmoss Reservoir	52.98	825	SD(34)826414
"	Buttock	59.23	1175	SD(34)807401
"	Colne, Judge Fields	46.39	559	SD(34)886406
"	Swinden S. Works	44.55	422	SD(34)874395
"	Barrowford Reservoir	46.67	473	SD(34)868403
"	Nelson	44.59	540	SD(34)872384
"	Coldwell	52.51	1060	SD(34)901356
"	Coldwell Reservoir No.2.	49.85	960	SD(34)900362
"	Nelson S. Works	45.16	359	SD(34)845375
"	Mitchell's House Reservoir	48.40	930	SD(34)788275
"	Accrington, Oak Hill Park	46.97	645	SD(34)765278
"	Coppy Clough S. Works	44.36	386	SD(34)743294
"	Rishton S. Works	43.02	300	SD(34)738311
"	Craggs Dole	49.28	1050	SD(34)783389
"	Great Harwood, Kebb Farm	48.43	670	SD(34)722328
"	Whalley	43.98	198	SD(34)725371
"	Parsonage Reservoir	41.21	631	SD(34)699321
"	Jeffrey Hill	47.89	900	SD(34)669399
"	Cowley Brook	48.04	616	SD(34)641392
"	Ribchester Institution	44.55	279	SD(34)627365
"	Alston Reservoir	41.93	330	SD(34)604366
South Lancashire	Cranberry Moss	56.49	982	SD(34)710192
Central Lancashire	Pickup Bank	51.49	727	SD(34)721237
"	Guide Reservoir	43.85	610	SD(34)698264
"	Pimms	53.55	987	SD(34)652195
South Lancashire	Slater Lane	55.95	985	SD(34)662192
Central Lancashire	Tockholes	53.05	970	SD(34)663201
"	Samlesbury S. Works	38.30	240	SD(34)621292
"	Preston, West Cliff	36.89	25	SD(34)532288
North Lancashire	Haighton Reservoir	40.42	264	SD(34)574352
Central Lancashire	Squires Gate	33.55	33	SD(34)316317
North Lancashire	Hare Syke	73.33	1520	SD(34)599575
"	Abbeystead Gardens	52.58	480	SD(34)566545
"	Old Gauge Basin	52.19	963	SD(34)541576
"	Damas Ghyll Reservoir	49.72	575	SD(34)527573
"	Scorton	41.77	92	SD(34)502487
"	Barnsfold Reservoir	47.97	508	SD(34)577416
"	Kirkham	37.82	78	SD(34)414346
"	Preesall P. Station	35.00	30	SD(34)365465
"	Garstang	38.18	68	SD(34)469480
"	Blea Farm Reservoir	45.56	330	SD(34)495583
"	Stodday	38.57	25	SD(34)460588
"	Sedbergh	55.09	404	SD(34)653919
Yorkshire W.Riding	Great Harlow	77.18	1490	SD(34)696612
"	Clapham Common	69.25	1180	SD(34)729615

TABLE II Estimated Annual Averages of Rainfall (in inches)
1916-1950 for short-period stations.
(Cheshire, Mersey, Lancashire and Cumberland River Board Areas)
(continued)

County	Station	Annual Average in.	Alt. ft.	N.G.R.
	Lancashire River Board			
North Lancashire	High Salter	61.75	990	SD(34)616620
"	Snab	45.71	100	SD(34)564682
"	Bare	38.55	20	SD(34)451644
"	Ledder Pots Reservoir	46.75	268	SD(34)533700
Westmorland	Crooklands	47.29	156	SD(34)534835
"	Fisher Tarn Reservoir	55.34	742	SD(34)549927
"	Kendal School	51.30	136	SD(34)519914
"	Levens, Beathwaite	51.56	110	SD(34)487862
"	Levens, Bridge End	49.65	23	SD(34)474857
"	Long House	108.25	353	NY(35)306067
"	Grasmere	94.49	275	NY(35)330084
"	Rydal Hall	86.05	354	NY(35)364064
"	Ambleside	74.40	151	NY(35)372040
North Lancashire	High Wray	69.15	175	NY(35)367019
Westmorland	Briery Close	69.17	350	NY(35)391019
"	Howe	73.47	496	NY(35)414024
"	Windermere, Nurseries	66.86	325	SD(34)410982
North Lancashire	Ferry House	61.53	145	SD(34)390956
"	Righting House	62.13	440	SD(34)374961
"	Hawkshead	70.45	275	SD(34)362973
"	Ghyll Head Reservoir	63.59	420	SD(34)397922
"	Tower Wood	61.43	150	SD(34)385912
"	Fell Foot	58.79	175	SD(34)382871
"	Haverthwaite	56.67	43	SD(34)345839
"	Coniston	96.93	250	SD(34)299978
"	Urswick	46.42	130	SD(34)268742
"	Little Urswick	48.57	130	SD(34)264738
"	Dalton-in-Furness, Eynhallow	46.29	150	SD(34)226742
"	Barrow-in-Furness, Gasworks	40.56	17	SD(34)217688
Cumberland	Ulpha	80.47	255	SD(34)209947
"	Lanthwaite	56.66	145	SD(34)166851
	Cumberland River Board			
Cumberland	Fellside	50.20	265	SD(34)117882
"	Wasdale Head	99.37	270	NY(35)186089
"	Sellafield	43.37	43	NY(35)027032
"	Gillerthwaite	93.03	420	NY(35)143140
"	Stanley Pond	45.00	90	NX(25)982143
"	St. Bees Head	38.38	309	NX(25)941143
"	Workington, Coke Ovens	37.96	29	NX(25)989280
"	Styehead No.1.	158.06	1100	NY(35)231106
"	Stockley Bridge	144.56	585	NY(35)233110
"	Sprinkling Tarn	185.03	1985	NY(35)227091
"	Styehead Tarn	172.92	1472	NY(35)221097
"	Borrowdale	105.38	330	NY(35)256143
"	Hill Top Gill	104.32	1025	NY(35)318119
"	Thirlmere, The Nook	98.85	621	NY(35)319128
"	Birkside	98.43	1900	NY(35)333133
"	Ullscarf	124.34	2100	NY(35)295123
"	Armboth Falls	101.30	1650	NY(35)290165
"	Dale Head Hall	90.65	620	NY(35)314175
"	Brown Cove	97.57	1800	NY(35)327163
"	Braithwaite, Blackwood	67.51	375	NY(35)231237
"	Mirehouse	52.67	330	NY(35)232282
"	Silloth	35.14	25	NY(35)125537

TABLE II Estimated Annual Averages of Rainfall (in inches)
1916–1950 for short-period stations.
(Cheshire, Mersey, Lancashire and Cumberland River Board Areas)
(continued)

County	Station	Annual Average in.	Alt. ft.	N.G.R.
	Cumberland River Board			
Westmorland	Eden Place	41.90	544	NY(35)774096
"	Appleby, Highfield	35.62	480	NY(35)688201
"	Temple, Sowerby	32.61	355	NY(35)609273
"	Greenside Mine	95.25	1100	NY(35)364174
"	Bowerbank	42.47	525	NY(35)474247
Cumberland	Penrith Castle Park	33.34	490	NY(35)514299
Westmorland	Wasdale Pike	100.82	1850	NY(35)537085
"	Wet Sleddale	87.88	960	NY(35)537107
"	Birbeck Fell	61.02	925	NY(35)564115
"	Thornship Gill	61.82	844	NY(35)551132
"	Artle Crag	107.16	2134	NY(35)482102
"	Mosedale Cottage	101.92	1443	NY(35)496095
"	High Wether Howe	86.92	1620	NY(35)515111
"	Swindale	75.31	875	NY(35)510129
"	Blea Water	117.55	1400	NY(35)456108
"	Riggindale	102.88	892	NY(35)466118
"	Wholter	94.49	819	NY(35)469132
"	Guerness	86.01	905	NY(35)483135
"	Low Raise	111.73	2465	NY(35)454137
"	Measand Beck	87.31	1800	NY(35)461151
"	Wallow Crag	79.61	1412	NY(35)496149
"	Burn Banks	71.57	700	NY(35)503159
"	Sealhole Grain	80.84	1775	NY(35)470165
"	Cawdale Beck	74.00	1180	NY(35)478176
"	Stanegarth	64.32	913	NY(35)497177
Cumberland	Nunwick Hall	32.03	290	NY(35)553358
"	Great Salkeld	32.06	330	NY(35)551365
"	Renwick	38.69	712	NY(35)598433
"	Geltsdale	42.16	750	NY(35)575537
"	Penruddock	49.81	860	NY(35)427277
"	Newton Rigg	34.93	560	NY(35)493310
"	Troutbeck, Welbank	67.91	800	NY(35)338323
"	Carlisle, S.Works.	31.29	39	NY(35)388566

TABLE III. Monthly Averages of Rainfall, 1916-1950, estimated for short period stations (in inches)

Cheshire, Mersey, Lancashire and Cumberland River Board Areas.

County	Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
S.Lancashire	Holmshore	6.67	4.85	3.64	3.70	3.64	3.70	4.79	5.99	5.33	6.48	6.36	5.45	60.60
Cheshire	Ringway	3.00	2.37	1.77	1.89	2.24	2.34	3.09	3.19	2.68	3.22	3.03	2.75	31.57
C.Lancashire	Nelson	4.68	3.61	2.41	2.68	2.72	2.76	3.66	4.37	4.01	4.91	4.59	4.19	44.59
"	Squire's Gate	3.19	2.18	1.88	1.84	2.35	2.21	2.89	3.49	3.29	3.69	3.39	3.15	33.55
Westmorland	Ambleside	9.23	6.03	4.69	4.02	3.87	3.79	5.21	6.10	6.84	8.33	8.18	8.11	74.40
Cumberland	Sellafield	4.25	2.73	2.65	2.43	2.73	2.65	3.95	4.25	4.29	4.73	4.42	4.29	43.37
"	Silloth	3.48	2.25	2.04	1.93	2.21	2.42	3.23	3.80	3.51	3.80	3.34	3.13	35.14
"	Geltsdale (new)	3.88	2.70	2.57	2.57	2.74	2.99	4.34	4.72	4.01	4.30	3.84	3.50	42.16
"	Newton Rigg	3.95	2.44	2.20	2.06	2.13	2.17	3.07	3.32	3.11	3.81	3.35	3.32	34.93

Table IVa. 35-year daily totals of rainfall (in inches), 1916–1950

Bidston

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	3.26	2.16	1.78	3.62	1.62	3.14	1.85	3.65	4.65	2.31	5.22	3.39
2	2.62	2.82	1.38	3.78	1.22	2.68	0.74	3.87	3.92	2.43	3.32	4.38
3	3.38	3.10	1.89	2.22	1.29	3.08	2.65	2.00	3.74	3.47	2.38	3.38
4	2.14	1.81	2.46	2.35	2.78	2.57	3.22	2.40	1.76	2.68	2.89	5.22
5	3.76	3.14	2.68	1.72	3.97	2.20	4.06	6.60	2.05	3.04	2.83	3.11
6	3.66	2.57	2.11	2.03	2.15	1.64	3.12	2.39	2.54	4.20	3.79	1.88
7	2.57	5.14	1.20	1.72	1.30	2.37	1.99	3.11	2.67	2.22	4.08	4.06
8	1.65	3.23	2.11	2.10	1.12	1.43	3.44	3.98	3.54	3.94	3.07	3.28
9	3.94	3.58	1.28	2.33	1.77	2.46	4.09	3.73	2.65	5.54	3.43	2.19
10	2.69	2.39	1.29	1.67	2.58	1.11	2.31	3.07	2.04	4.80	2.00	2.93
11	3.19	1.87	1.87	2.00	2.71	1.98	1.59	4.11	2.14	3.62	4.97	2.61
12	3.35	2.62	2.21	2.04	3.48	3.49	3.81	2.59	4.48	3.04	3.06	1.18
13	2.24	0.92	1.54	2.41	1.53	1.47	3.73	3.02	3.20	4.50	4.02	2.28
14	3.72	2.07	1.08	1.50	1.61	5.15	2.58	3.87	2.97	1.94	4.10	3.04
15	2.72	1.59	1.11	1.81	2.98	1.81	4.67	2.31	3.17	2.53	2.24	3.45
16	1.90	1.74	1.49	2.05	2.61	1.62	4.34	2.89	3.41	2.86	4.85	2.08
17	2.76	1.50	1.99	1.78	3.56	1.73	3.29	4.23	2.43	3.63	3.02	1.17
18	2.79	1.56	1.50	1.28	2.75	3.24	6.27	4.51	2.45	2.43	4.85	2.22
19	2.44	3.28	2.71	1.61	2.37	2.52	2.31	3.02	5.50	3.27	2.69	1.99
20	2.24	2.05	2.42	2.30	3.77	2.76	4.56	4.61	2.96	2.63	1.88	2.22
21	3.76	1.37	2.17	0.82	1.85	2.30	2.98	3.63	3.68	4.31	4.14	2.24
22	2.75	2.44	1.67	1.12	3.34	2.13	4.57	3.66	3.47	3.37	3.10	3.25
23	1.92	1.02	1.72	2.58	3.02	1.66	2.58	2.26	4.15	5.48	2.57	3.09
24	2.38	2.52	2.34	0.96	2.11	1.48	1.94	4.27	3.98	3.50	2.41	2.48
25	2.37	2.45	1.79	2.21	2.42	1.18	3.25	2.22	3.09	2.81	2.80	2.29
26	3.11	2.47	1.83	1.90	2.64	1.24	2.45	2.31	2.11	4.26	3.17	2.43
27	2.94	3.15	1.56	1.63	4.61	2.46	2.65	4.48	1.75	2.69	3.38	2.85
28	3.18	1.46	1.29	1.13	2.51	1.39	4.10	6.61	1.93	2.45	2.74	3.79
29	3.29	0.65	1.47	1.95	2.80	2.85	3.59	3.39	1.92	4.24	1.67	5.22
30	2.21	–	2.05	1.95	1.80	3.94	1.06	2.74	3.79	3.19	2.19	3.31
31	3.78	–	3.11	–	4.62	–	2.71	3.20	–	3.09	–	4.60

TABLE IVa 35-Year Totals of Daily Rainfall, 1916-1950 (in inches)

Swineshaw*

Day	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec
1	8.17	6.34	2.93	4.03	2.12	4.17	2.79	3.78	6.67	2.74	6.39	6.01
2	6.34	6.25	2.88	5.08	1.80	4.70	2.33	4.30	4.16	2.67	3.74	5.00
3	4.68	5.06	2.38	3,14	2.06	3.76	4.00	3,04	4.91	4.05	4.62	5.82
4	5.07	4.94	3.74	4.32	3.23	2.16	4.15	3.69	4.24	4.75	3.83	7.96
5	5.64	4.49	2.77	3.08	4.13	3.42	3.61	4.16	2.57	5.05	4.84	5.10
6	6.93	6.24	2.58	4.07	4.17	3.18	3.60	4.97	3.37	4.28	4.04	4.11
7	5.13	5.38	4.30	2.68	3.07	4.24	3.62	7.63	5.34	4.98	6.08	4.82
8	4.68	5.69	3.77	3.06	1.79	3.14	3.46	4.15	2.88	5.80	3.89	4.70
9	6.47	8.22	2.99	4.10	2.30	2.73	5.16	4.38	2.90	7.90	7.81	3.86
10	4.68	4.18	3.54	2.55	3.59	2.00	4.84	4.30	3.11	6.15	3.99	4.07
11	6.76	4.46	2.73	2.46	2.90	2.04	5.08	5.32	3.06	3.58	9.41	2.83
12	5.71	3.73	5.16	3.63	2.55	3.41	6.02	4.32	4.66	4.87	6.67	2.62
13	4.05	2.40	1.78	4.13	2.82	4.31	3.56	2.64	4.89	5.59	5.82	3.58
14	5.54	3.26	2.00	2.88	2.83	4.79	2.83	2.89	5.13	2.57	5.41	4.60
15	6.30	4.76	4.35	2.56	3.05	2.81	5.89	2.30	4.04	3.33	4.95	2.88
16	3.23	4.09	2.97	3.93	3.38	2.25	4.94	4.29	4.84	2.76	6.54	4.05
17	4.97	3.34	3.94	5.25	4.48	2.95	3.91	5.23	3.90	7.59	7.20	2.86
18	5.75	3.24	2.27	3.69	2.11	9.82	5.57	4.14	4.83	5.48	7.54	3.30
19	3.85	4.94	3.34	3.67	3.53	3.67	5.39	5.89	6.40	3.88	4.34	3.35
20	2.86	3.27	3.24	2.89	2.53	2.75	5.76	5.39	5.23	2.89	4.00	2.24
21	5.33	1.98	3.00	1.51	1.85	3.30	3.40	5.39	2.87	6.25	4.32	3.89
22	4.49	5.38	2.08	2.45	2.84	5.53	7.55	4.45	6.60	4.88	4.72	4.13
23	4.02	2.19	3.79	3.87	3.61	2.84	5.33	3.87	3.81	5.28	5.51	4.65
24	5.93	3.24	2.75	2.72	2.33	2.55	3.86	4.47	4.93	5.81	4.66	5.11
25	3.19	3.95	3.79	4.03	3.14	3.05	3.68	2.50	5.15	6.46	5.29	4.41
26	4.22	5.97	2.80	2.88	6.06	2.72	4.32	5.43	2.80	7.11	5.96	5.32
27	4.47	4.97	2.64	3.67	4.33	4.01	3.66	4.31	5.56	4.48	5.27	4.84
28	6.11	3.90	2.60	1.96	2.39	3.26	5.39	5.77	1.85	4.03	4.82	5.30
29	4.73	1.17	3.60	2.68	10.09	3.45	5.07	4.46	2.18	7.33	3.44	7.40
30	4.29	-	1.77	1.80	3.65	3.49	2.42	2.87	3.51	4.47	3.74	5.44
31	7.23	-	3.83	-	2.59	-	3.08	3.35	-	5.01	-	5.81

* Just within the Mersey Catchment

Table IVa. 35-year daily totals of rainfall (in inches), 1916-1950

Barnacre Reservoir

Day	Jan.	Feb.	Mar.	Apr.	May	June	Jly.	Aug.	Sep.	Oct.	Nov.	Dec.
1	7.58	5.75	2.79	3.41	1.94	3.23	4.42	6.28	9.25	4 13	8.63	7.17
2	6.51	5.36	2.53	4.45	1.55	4.15	2.46	5.49	6.25	5.26	7.21	6.50
3	4.68	6.18	3.35	3.50	2.29	6.70	6.02	2.68	6.70	4.83	4.58	4.79
4	4.75	3.74	3.84	3.40	3.59	3.82	7.49	5.22	4.24	6.22	3.52	7.56
5	5.58	4.34	3.35	3.41	5.66	3.66	6.19	6.78	4.37	6.46	5.45	3.84
6	7.35	4.95	2.97	2.19	2.68	3.41	3.58	5.32	5.08	5.07	4.93	3.71
7	5.07	4.62	3.60	2.64	2.05	4.26	4.27	6.05	3.04	5.50	6.53	5.44
8	5.54	5.34	2.14	4.23	2.57	4.19	3.13	6.35	4.43	6.87	3.70	5.42
9	6.97	6.16	2.24	2.79	2.08	4.70	4.79	6.06	4.11	9.94	5.03	4.70
10	4.90	4.23	3.45	2.61	3.30	3.84	6.20	5.44	4.76	9.06	4.58	4.23
11	5.25	3.19	1.75	2.92	4.06	2.46	4.15	5.13	4.43	4.10	8.31	4.19
12	7.57	4.49	2.66	2.86	4.56	3.01	5.01	4.68	7.49	6.05	6.03	2.75
13	4.45	2.08	1.54	3.89	3.27	3.20	5.44	5.17	5.76	8.92	7.28	6.27
14	5.61	4.90	1.19	2.95	3.29	6.88	4.69	5.21	4.39	3.10	6.45	6.09
15	4.51	4.48	2.12	3.58	4.03	2.48	6.84	7.92	6.11	4.18	3.68	5.16
16	5.47	2.19	3.39	3.76	2.51	2.71	5.24	7.42	11.03	3.75	6.32	3.79
17	4.37	2.45	4.20	3.19	4.09	3.96	5.31	8.53	6.08	7.33	3.71	3.19
18	6.60	2.62	3.15	1.44	3.05	4.27	6.63	5.76	5.36	5.56	5.79	4.30
19	3.45	5.52	4.32	2.74	2.82	3.80	3.04	4.67	9.52	4.51	4.57	3.01
20	3.64	4.25	3.63	3.17	3.80	3.07	6.54	10.19	7.76	2.91	4.94	2.99
21	5.38	2.39	3.13	1.71	2.31	2.90	4.47	6.27	6.20	7.91	5.58	4.73
22	5.86	4.62	2.51	2.71	3.04	6.06	5.63	5.59	5.29	5.37	6.15	4.19
23	3.86	1.76	3.08	5.13	3.52	3.85	5.97	4.82	3.93	7.82	4.78	5.09
24	6.52	3.68	4.13	3.41	2.90	2.35	3.34	4.12	8.32	8.05	3.85	5.00
25	3.07	3.49	2.33	3.16	3.64	2.98	4.45	3.63	6.86	6.24	5.94	3.64
26	3.68	4.44	3.24	3.04	3.84	3.26	6.24	6.25	3.15	7.25	6.14	5.93
27	5.10	4.94	3.52	1.88	4.56	5.73	7.18	7.49	3.88	5.35	7.32	5.06
28	6.75	2.42	2.72	1.41	2.98	4.72	5.85	7.50	4.41	4.74	3.73	7.95
29	6.62	0.56	4.77	1.96	4.00	4.38	6.50	5.72	2.49	9.60	3.31	8.22
30	4.33	-	2.57	1.24	2.67	3.68	5.99	3.41	5.35	5.09	5.63	5.71
31	5.89	-	3.25	-	5.86	-	3.35	6.03	-	5.32	-	5.93

TABLE IVa Contd. Settle. *

Day	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec
1	10.81	6.40	2.68	5.08	1.90	3.54	3.61	4.98	6.22	3.73	8.40	7.76
2	6.53	5.62	2.52	4.61	1.98	4.42	3.38	3.59	5.73	5.98	6.63	6.46
3	4.85	5.26	2.82	3.47	2.13	3.29	3.97	2.43	5.79	5.80	6.31	5.30
4	6.20	4.70	3.96	3.82	3.24	3.38	5.04	3.28	3.11	5.80	5.71	7.55
5	5.56	5.71	4.04	3.35	3.64	3.20	5.64	5.33	4.13	8.35	5.79	5.62
6	7.78	6.14	2.43	2.48	4.42	3.21	3.30	4.37	3.52	6.08	4.45	4.33
7	6.82	6.20	3.82	3.20	2.75	3.18	6.86	4.73	3.39	4.91	5.14	5.77
8	7.11	6.46	2.54	4.27	2.04	2.69	2.86	6.66	3.26	7.39	3.42	4.14
9	9.45	7.67	1.91	4.40	1.94	3.60	3.87	3.71	2.66	10.67	6.23	4.61
10	6.09	5.91	3.67	2.83	4.30	2.01	4.16	5.25	3.81	8.49	5.34	3.08
11	7.79	4.73	1.76	3.01	2.93	2.08	2.33	5.08	2.02	4.20	7.68	3.39
12	8.06	6.50	2.48	4.07	4.33	2.14	3.43	3.91	6.51	5.35	5.80	2.37
13	3.77	1.85	1.81	3.98	2.10	2.98	4.13	4.59	5.42	5.82	7.53	5.54
14	7.06	4.64	1.13	4.41	2.75	5.10	2.79	5.29	3.13	3.39	7.62	6.59
15	6.81	6.90	2.17	4.81	3.46	2.04	6.46	5.09	5.77	4.27	4.76	5.92
16	6.60	4.15	4.14	2.92	2.02	1.84	5.52	5.32	8.31	2.61	5.93	3.10
17	5.94	1.90	4.15	2.86	4.57	2.72	4.54	4.96	7.37	7.47	4.77	3.79
18	6.24	2.48	3.50	1.54	3.65	4.09	3.79	4.46	4.35	6.36	6.26	4.49
19	3.86	4.03	3.46	3.06	1.95	2.23	2.78	5.52	8.23	4.11	4.84	3.17
20	5.48	4.25	2.85	2.39	2.96	2.73	3.20	9.10	6.70	3.21	4.35	3.33
21	4.92	2.69	3.06	1.89	2.54	2.26	3.98	8.24	5.23	6.24	5.56	5.32
22	5.54	5.18	2.73	2.73	2.63	3.90	5.09	3.99	5.91	4.16	6.10	4.31
23	3.65	1.73	2.98	4.84	5.15	2.48	3.54	4.34	2.95	6.27	7.61	3.57
24	5.75	2.91	2.42	2.89	2.33	1.59	3.78	4.46	5.91	9.16	4.53	3.86
25	4.05	4.58	3.11	4.42	2.44	1.77	3.94	4.80	3.89	6.81	5.76	4.35
26	3.90	4.74	2.58	2.38	3.39	2.22	4.03	4.32	2.73	7.47	4.25	7.00
27	4.20	5.64	3.25	2.68	3.34	4.80	5.45	6.36	2.53	5.83	5.66	6.04
28	6.07	4.07	3.05	1.79	3.52	4.05	5.46	5.88	2.95	4.68	3.02	9.53
29	6.11	.74	5.32	1.41	4.34	3.33	5.83	7.25	1.69	7.99	3.42	9.27
30	4.80	..	2.76	1.98	3.25	3.71	4.40	2.97	4.47	5.81	6.94	6.78
31	8.00	-	4.08	-	4.12	-	2.83	3.54	-	4.66	-	6.97

This station, from the Lancashire River Board Area, has been included to represent the extreme west of the Yorkshire River Board area.

Table IVa.35-year daily totals of rainfall (in inches), 1916-1950

Windermere, Holehird

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	15.65	9.61	5.96	4.69	2.06	4.79	6.37	6.54	13.01	6.39	11.43	10.22
2	11.59	8.76	3.92	5.17	2.14	4.52	4.14	6.84	7.36	6.67	11.80	12.43
3	9.57	9.11	4.91	5.19	4.45	6.00	8.07	3.47	10.61	9.63	10.65	6.48
4	7.73	7.33	6.69	4.73	4.79	5.03	6.29	4.99	7.15	9.10	11.86	12.02
5	8.67	7.87	6.75	4.68	6.43	4.74	5.26	8.61	5.18	11.86	10.64	9.51
6	10.70	8.16	4.34	3.85	5.81	5.03	4.23	5.17	6.53	9.77	6.18	6.94
7	9.67	8.65	6.16	4.97	2.66	4.14	5.06	6.09	4.62	7.85	7.76	7.44
8	13.22	8.93	4.07	5.47	3.61	2.75	3.53	8.24	5.73	11.65	6.20	6.09
9	12.13	11.30	1.75	6.29	2.76	5.14	4.83	5.90	4.08	14.81	6.79	6.53
10	9.54	7.53	4.58	5.42	5.91	4.53	7.19	5.11	7.13	8.82	7.94	7.18
11	7.84	5.46	2.92	3.23	5.12	2.65	4.11	5.12	4.49	7.78	11.84	6.52
12	14.67	7.55	4.76	4.44	6.58	2.91	5.35	6.32	8.60	7.62	11.62	5.26
13	7.65	3.33	3.49	5.67	5.39	3.02	6.47	5.79	8.04	8.94	9.38	10.04
14	10.34	9.31	2.23	7.09	4.36	6.99	5.99	4.46	6.24	4.84	10.73	9.36
15	8.49	9.03	4.84	5.26	4.22	3.99	5.78	8.61	9.91	7.33	4.88	9.17
16	10.77	4.46	6.77	4.47	4.24	3.18	5.12	11.06	10.53	7.03	6.41	8.30
17	8.79	3.20	6.44	4.48	4.76	3.23	5.48	8.95	9.45	9.21	8.43	10.44
18	8.79	4.40	7.48	2.18	4.54	3.98	7.62	5.89	7.19	5.91	11.38	7.57
19	7.33	8.29	8.39	4.50	3.50	4.29	5.59	4.46	10.11	5.47	8.63	5.19
20	8.69	5.34	6.21	4.03	4.30	3.93	5.46	11.29	9.82	7.25	7.79	8.07
21	9.09	6.06	4.11	2.69	3.05	3.74	4.51	9.82	11.80	9.28	9.14	9.31
22	8.83	7.08	4.56	5.38	3.98	6.76	6.26	5.54	7.12	7.13	10.81	7.74
23	9.68	2.31	4.31	7.28	5.02	2.90	6.18	5.05	4.86	10.19	13.14	7.07
24	12.97	3.71	4.67	7.05	3.70	4.75	3.69	5.46	7.02	12.70	8.38	7.44
25	5.80	5.92	3.71	5.17	4.13	2.74	5.28	6.26	6.80	9.96	8.40	9.09
26	5.58	8.05	4.51	3.85	6.78	5.31	7.49	7.88	5.94	9.72	5.00	12.45
27	7.48	7.74	5.10	3.90	3.85	6.05	6.86	8.99	4.38	7.39	8.89	6.82
28	10.76	3.69	4.86	2.73	2.94	7.23	8.72	9.32	5.17	7.64	4.67	15.70
29	7.81	1.73	9.64	2.61	4.95	4.21	10.70	9.79	3.99	13.08	6.29	10.21
30	6.66	-	3.39	1.36	2.93	5.36	8.08	4.10	8.91	8.24	10.81	9.65
31	13.06	-	7.07	-	7.38	-	4.94	7.91	-	7.61	-	8.70

Table IVa. 35-year daily totals of rainfall (in inches), 1916-1950

Ravenglass

Day	Jan.	Feb.	Mar.	Apr.	May	June	Jly.	Aug.	Sep.	Oct.	Nov.	Dec.
1	7.38	5.32	4.07	3.58	1.03	3.99	4.13	5.14	9.00	3.38	8.08	5.86
2	5.45	4.60	2.48	2.62	1.38	3.80	2.12	3.41	6.26	4.16	6.17	7.48
3	4.57	5.26	3.07	2.34	3.13	4.60	5.60	2.02	6.93	6.00	5.93	4.28
4	4.92	2.63	2.82	3.29	3.29	3.85	4.52	4.95	4.03	4.63	5.90	6.10
5	4.51	3.11	3.99	2.74	3.59	2.95	4.88	5.47	3.68	4.70	4.96	5.26
6	6.54	4.79	2.29	2.53	4.03	4.29	3.87	3.51	5.80	7.45	5.47	3.54
7	3.94	3.81	3.03	2.09	2.16	3.31	4.04	5.53	4.01	5.26	4.46	4.02
8	5.29	5.26	2.85	4.21	2.24	1.54	2.84	5.86	4.31	6.29	3.28	5.93
9	7.63	4.77	1.56	2.64	2.52	3.31	4.66	4.43	4.03	8.76	5.30	4.03
10	5.33	4.01	1.45	3.37	4.07	2.08	5.27	2.82	4.94	5.32	4.40	6.22
11	4.58	3.12	3.11	2.00	4.90	2.83	5.73	3.40	3.36	5.75	7.21	4.79
12	7.77	3.88	2.34	3.09	4.26	3.94	4.96	5.32	5.11	4.67	6.64	3.22
13	5.15	2.05	1.36	3.62	2.46	4.66	5.16	4.37	4.84	5.67	4.44	5.07
14	5.00	3.90	1.69	3.51	4.24	4.52	5.11	3.06	3.44	2.61	6.18	6.64
15	4.43	4.35	3.46	2.65	3.13	2.83	5.17	7.15	4.90	4.88	3.24	5.53
16	4.55	2.00	5.15	3.44	4.38	2.20	3.41	5.12	9.40	4.68	5.70	5.17
17	6.07	2.91	3.30	3.24	3.41	2.59	3.05	4.63	6.08	5.60	3.37	4.69
18	3.69	2.64	4.76	1.84	3.68	2.80	4.00	4.75	5.81	4.25	6.60	4.61
19	2.13	4.14	5.08	4.14	2.93	2.55	4.54	3.67	6.33	3.80	6.36	4.00
20	4.67	2.53	3.61	2.32	2.66	3.03	4.99	6.85	6.02	5.01	4.47	3.75
21	5.38	2.34	3.44	1.84	2.53	2.67	3.50	6.97	5.76	5.23	6.79	5.45
22	4.18	3.40	2.65	3.98	3.31	3.12	4.04	1.93	4.71	5.23	5.05	3.58
23	4.15	1.46	1.76	4.55	2.97	2.13	3.49	3.32	5.15	8.56	7.52	3.33
24	5.10	2.86	2.92	5.32	3.05	1.09	2.04	3.44	5.17	7.02	4.70	5.12
25	5.64	4.51	3.14	2.36	2.20	2.19	3.24	3.86	6.51	6.54	4.39	4.36
26	2.85	5.65	2.94	3.16	4.43	3.50	5.81	5.77	3.99	5.41	4.12	4.45
27	4.50	3.49	3.34	2.07	3.01	4.91	4.61	6.10	2.63	3.90	5.06	4.96
28	4.39	1.91	2.32	0.97	1.98	4.09	7.07	6.58	3.67	4.48	2.78	6.97
29	4.46	0.60	4.95	1.62	2.70	3.58	6.75	5.03	3.21	8.32	3.99	6.13
30	4.20	-	1.87	1.16	1.86	3.54	4.70	2.51	5.40	4.08	5.33	5.20
31	6.52	-	3.37	-	6.16	-	2.56	5.61	-	5.25	-	7.05

Table IVa. 35-year daily totals of rainfall (in inches), 1916-1950

Carlisle

Day	Jan.	Feb.	Mar.	Apr.	May	June	Jly.	Aug.	Sep.	Oct.	Nov.	Dec.
1	5.09	3.18	2.13	2.50	1.11	3.61	4.42	3.44	5.61	2.43	3.72	2.73
2	3.16	3.38	1.80	2.39	1.34	3.59	1.99	4.19	3.89	2.30	4.17	3.92
3	3.76	3.89	1.75	1.79	.91	2.07	4.34	1.31	4.66	3.71	3.51	3.30
4	3.75	2.69	1.86	2.40	2.95	3.12	3.43	3.89	4.46	4.41	4.12	5.66
5	1.73	3.73	2.96	2.13	3.72	2.16	3.30	3.92	3.34	3.29	3.34	2.95
6	3.17	3.14	1.64	1.09	3.23	1.98	4.44	3.27	3.34	3.69	2.46	3.06
7	3.95	2.91	1.90	1.75	1.33	3.02	5.27	3.29	2.69	3.63	3.33	3.18
8	4.22	2.54	1.05	1.97	1.95	2.28	3.54	4.74	2.54	6.22	2.94	3.32
9	4.35	3.39	1.39	2.69	1.49	2.61	1.65	3.98	3.40	7.77	3.33	2.16
10	3.65	4.84	2.33	2.35	2.24	1.99	2.72	3.16	4.07	2.62	3.36	1.75
11	3.49	2.63	1.02	2.32	1.75	0.98	3.26	2.90	1.47	3.69	5.05	2.14
12	3.48	2.81	1.94	3.42	2.86	2.32	3.20	6.33	4.04	4.29	4.59	1.46
13	3.10	1.24	2.52	1.85	2.64	3.87	6.99	3.60	5.32	3.30	2.82	2.86
14	3.42	3.54	0.85	2.44	2.69	4.28	2.64	2.77	4.07	1.72	3.16	2.44
15	2.60	3.24	1.27	1.56	1.71	1.78	3.59	4.70	4.42	3.17	2.60	2.50
16	3.09	1.98	3.21	3.59	3.30	2.34	4.91	4.42	6.36	2.86	3.70	2.16
17	2.95	1.19	2.41	2.65	1.55	2.03	3.48	6.00	3.65	4.97	3.35	2.04
18	4.27	1.97	2.68	1.06	1.54	4.57	4.68	4.46	3.38	2.00	4.00	2.53
19	2.28	2.41	2.78	1.54	2.03	1.80	2.39	4.11	8.36	3.08	3.11	1.55
20	2.19	2.58	1.97	1.20	2.63	3.01	5.21	6.96	4.90	2.53	2.32	2.63
21	2.55	1.88	2.35	1.98	1.67	2.72	2.54	4.97	4.09	5.77	3.46	2.37
22	1.80	2.75	1.84	2.71	3.65	3.34	5.49	3.08	4.62	3.28	4.22	3.22
23	2.75	1.46	1.83	3.27	2.29	2.42	3.46	3.3[illegible]	2.34	7.19	3.56	1.63
24	4.20	1.58	2.05	2.94	2.84	2.15	2.20	3.94	3.87	5.71	3.13	2.65
25	2.75	1.99	1.89	2.23	2.32	1.95	4.02	3.34	2.79	7.18	3.30	2.69
26	2.92	2.85	2.11	1.74	2.59	2.34	6.35	4.57	2.84	3.95	2.22	4.07
27	1.40	2.23	1.68	2.24	2.71	4.34	4.50	5.52	1.42	3.19	2.31	2.51
28	3.46	1.68	1.85	1.74	3.57	3.21	3.55	4.65	3.05	2.69	1.62	4.66
29	3.04	0.68	3.99	0.96	2.13	3.31	5.54	5.38	1.56	4.39	2.30	4.90
30	2.43	-	1.23	1.58	2.08	3.21	2.81	3.83	3.53	3.16	3.90	3.17
31	4.42	-	2.97	-	2.75	-	3.08	2.98	-	2.31	-	3.46

Table IVa. 35-year daily totals of rainfall 1916-1950, in inches

Geltsdale

Day	Jan.	Feb.	Mar.	Apr.	May	June	Jly.	Aug.	Sep.	Oct.	Nov,	Dec.
1	6.62	4.92	3.51	2.87	1.80	5.27	3.32	4.35	6.41	2.84	5.56	3.62
2	3.55	3.20	1.90	3.56	1.60	4.02	2.30	4.90	3.61	2.64	4.87	4.53
3	4.56	4.33	2.08	2.73	1.09	3.09	4.28	1.67	4.76	4.06	4.88	3.19
4	4.61	2.84	2.58	2.24	3.08	2.86	5.85	4.25	5.00	5.01	4.27	5.44
5	2.81	3.62	3.46	1.91	3.71	3.07	3.65	3.60	3.37	5.25	4.34	4.26
6	4.63	3.56	2.37	1.45	4.65	2.42	3.71	4.13	2.75	4.05	3.60	4.60
7	4.73	3.11	3.08	2.59	1.93	2.49	4.29	3.38	3.83	3.40	3.77	2.61
8	5.78	3.16	2.19	2.94	2.10	2.70	4.21	5.15	3.66	6.60	3.23	3.26
9	4.72	3.65	2.49	2.81	2.15	3.48	2.81	4.57	4.06	6.83	4.72	2.75
10	5.20	4.37	2.58	2.46	1.91	2.38	3.70	3.80	3.85	3.32	3.92	2.63
11	4.51	3.29	2.47	2.77	2.45	1.19	3.43	4.43	2.90	3.85	5.65	3.45
12	5.12	3.37	2.26	3.27	3.13	2.45	3.16	8.38	4.70	4.27	4.71	2.76
13	3.26	1.45	2.69	3.03	3.39	3.32	4.75	4.04	5.63	4.60	2.88	4.65
14	5.01	3.30	1.04	2.70	4.67	6.19	4.06	3.38	4.17	2.09	4.56	3.26
15	3.81	3.67	2.45	2.05	2.48	3.82	4.72	5.11	4.17	4.18	2.87	2.56
16	3.38	2.22	3.30	4.33	3.79	2.95	6.69	4.61	7.02	3.52	3.27	2.37
17	2.35	1.84	2.42	3.28	2.31	2.67	5.72	4.70	5.95	5.02	4.66	2.73
18	4.77	1.42	3.16	2.53	1.45	3.60	4.30	6.21	2.86	3.55	4.62	2.51
19	2.44	2.85	3.26	2.53	2.20	2.14	3.19	4.28	6.14	3.18	3.96	1.93
20	2.83	2.20	2.36	1.73	3.09	2.72	4.01	9.22	5.97	2.62	2.79	3.81
21	2.46	2.00	2.27	3.30	2.34	2.91	4.33	6.87	4.52	4.93	4.70	2.79
22	2.14	3.16	1.72	2.79	4.16	4.17	7.25	4.20	5.77	3.72	5.58	3.52
23	3.39	2.13	1.87	4.02	2.95	2.61	4.22	4.50	2.63	7.77	4.03	1.72
24	3.42	1.90	2.92	3.66	1.98	2.20	3.71	3.40	3.74	6.49	3.08	3.61
25	3.98	2.56	2.78	2.41	3.72	2.33	5.10	4.02	3.58	5.42	4.65	3.52
26	3.56	3.92	2.62	2.68	4.24	3.10	6.61	5.51	3.11	4.92	2.55	4.51
27	2.35	4.75	3.00	3.26	3.25	5.10	4.85	5.42	2.44	5.03	2.58	3.18
28	4.17	2.34	3.04	1.99	3.45	3.55	4.33	7.72	3.81	3.86	2.38	6.33
29	4.34	0.37	4.31	2.79	2.35	4.45	5.87	6.22	3.22	6.64	6.23	5.16
30	4.12		2.24	2.65	3.22	1.06	6.67	4.23	2.27	4.70	2.26	5.93
31	2.99		2.08		2.22		2.58	2.56		1.54		2.58

Table IVb Rainfall totals in inches, divided by 35, thus giving 35-year means ranging from 'trace' to .70 in., for use with table IVa.

Totals in inches x	35 yr means $\bar{x}/35$	Totals in inches x	35 yr means $\bar{x}/35$
- .17	'trace'	12.43 - 12.77	.36
.18 - .52	.01	12.78 - 13.12	.37
.53 - .87	.02	13.13 - 13.47	.38
.88 - 1.22	.03	13.48 - 13.82	.39
1.23 - 1.57	.04	13.83 - 14.17	.40
1.58 - 1.92	.05	14.18 - 14.52	.41
1.93 - 2.27	.06	14.53 - 14.87	.42
2.28 - 2.62	.07	14.88 - 15.22	.43
2.63 - 2.97	.08	15.23 - 15.57	.44
2.98 - 3.32	.09	15.58 - 15.92	.45
3.33 - 3.67	.10	15.93 - 16.27	.46
3.68 - 4.02	.11	16.28 - 16.62	.47
4.03 - 4.37	.12	16.63 - 16.97	.48
4.38 - 4.72	.13	16.98 - 17.32	.49
4.73 - 5.07	.14	17.33 - 17.67	.50
5.08 - 5.42	.15	17.68 - 18.02	.51
5.43 - 5.77	.16	18.03 - 18.37	.52
5.78 - 6.12	.17	18.38 - 18.72	.53
6.13 - 6.47	.18	18.73 - 19.07	.54
6.48 - 6.82	.19	19.08 - 19.42	.55
6.83 - 7.17	.20	19.43 - 19.77	.56
7.18 - 8.52	.21	19.78 - 20.12	.57
7.53 - 7.87	.22	20.13 - 20.47	.58
7.88 - 8.22	.23	20.48 - 20.82	.59
8.23 - 8.57	.24	20.83 - 21.17	.60
8.58 - 8.92	.25	21.18 - 21.52	.61
8.93 - 9.27	.26	21.53 - 21.87	.62
9.28 - 9.62	.27	21.88 - 22.22	.63
9.63 - 9.97	.28	22.23 - 22.57	.64
9.98 - 10.32	.29	22.58 - 22.92	.65
10.33 - 10.67	.30	22.93 - 23.27	.66
10.68 - 11.02	.31	23.28 - 23.62	.67
11.03 - 11.37	.32	23.63 - 23.97	.68
11.38 - 11.72	.33	23.98 - 24.32	.69
11.73 - 12.07	.34	24.33 - 24.67	.70
12.08 - 12.42	.35		

Table V,

BIDSTON

Accumulated Frequencies of Daily Rainfall (in inches), 1916–1950

Daily Totals	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	All months
≥ 2.50													
2.40													
2.30													
2.20													
2.10													
2.00					1								1
1.90					1								1
1.80					1								1
1.70					1								1
1.60					1	1							2
1.50					1	1	2						4
1.40					1	1	2	3		1			8
1.30					1	1	3	3		1			9
1.20		3			1	1	7	4		1			17
1.10		3			3	1	9	5	2	1	2	1	27
1.00	2	4	2		3	3	11	7	4	4	3	3	46
0.90	2	6	2		3	4	13	9	6	4	6	4	59
0.80	3	6	3		9	10	15	13	11	7	8	7	92
0.70	5	7	3	1	9	12	20	16	15	12	11	10	121
0.60	17	13	11	4	15	18	32	35	27	24	22	17	235
0.50	29	17	16	11	25	23	42	48	32	41	31	32	347
0.40	55	34	27	28	43	42	66	84	62	71	63	48	623
0.30	80	21	39	41	75	63	96	121	91	116	91	77	911
0.20	147	107	89	98	143	119	165	196	167	177	178	169	1755
0.10	251	195	164	175	226	180	237	280	247	292	263	256	2766
≥ 0.005	671	496	504	521	505	476	557	591	574	629	636	683	6843
≤ *0.004	414	493	581	529	580	574	528	494	476	456	414	402	5942
Total No: of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

*Including rainless days

TABLE V. Accumulated Frequencies of Daily Rainfall Amounts 1916-1950

Swineshaw

Daily Totals (in inches)	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	All months
4.50					1								1
4.10					1	1							2
2.50					1	1							2
2.40					1	1					1		3
2.30					1	1	1				1		4
2.20					1	1	1				1		4
2.10					1	1	1				1		4
2.00			1		1	2	1	1			1		7
1.90			1		1	2	3	1			1		9
1.80			1		1	2	3	1			2		10
1.70			1		1	3	4	1			3		13
1.60	2		1		1	3	4	1		1	3		16
1.50	5	3	2	1	2	3	4	2	3	2	5		32
1.40	6	5	4	1	2	3	5	3	4	5	7	1	46
1.30	6	6	4	1	2	3	5	5	5	7	8	1	53
1.20	6	8	5	2	4	5	5	6	7	11	11	1	71
1.10	9	12	7	2	4	7	7	7	8	14	14	3	94
1.00	16	14	8	3	7	8	11	9	12	18	17	6	129
0.90	21	21	8	5	12	13	16	13	18	21	22	8	175
0.80	33	26	10	9	19	17	24	19	26	25	34	13	255
0.70	47	34	17	13	27	26	34	30	31	41	42	26	368
0.60	71	48	26	23	37	34	60	45	38	62	65	46	558
0.50	96	73	40	37	55	49	82	69	64	95	89	70	814
0.40	124	102	59	63	74	73	114	118	99	121	121	114	1182
0.30	181	147	103	109	101	121	166	163	148	170	183	162	1754
0.20	280	219	175	194	163	174	241	239	214	262	269	247	2677
0.10	432	339	277	312	272	279	355	362	319	402	408	417	4174
0.005	704	561	552	545	493	516	579	604	577	656	688	704	7179
* 0.004	381	428	533	505	592	534	506	481	473	429	362	381	5635
Total No: of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

* Including Rainless days.

Table V cont'd. BARNACRE

Accumulated Frequencies of Daily Rainfall (in inches), 1916-1950

Daily Totals	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	All months
≥ 2.60						1			1				2
2.50						1			1				2
2.40						1			1				2
2.30						1			2				3
2.20						2			2				4
2.10						2			2	1		1	6
2.00						2			2	1	1	1	7
1.90						4			2	1	2	1	10
1.80						4			2	1	2	1	10
1.70		1				4	1	2	2	2	2	1	15
1.60	1	1	1			4	2	6	6	3	3	1	28
1.50	1	1	1			5	3	6	7	5	6	1	36
1.40	3	1	1		2	6	6	9	8	5	7	2	50
1.30	4	1	1	1	3	7	6	13	12	6	11	3	68
1.20	7	2	1	2	3	7	8	16	12	11	14	5	88
1.10	7	3	3	3	4	9	13	25	17	14	15	8	121
1.00	11	7	5	4	6	14	15	30	24	23	17	11	167
0.90	17	12	7	6	11	19	26	41	35	36	22	15	247
0.80	23	14	10	8	13	23	34	51	48	47	27	25	323
0.70	37	23	15	11	20	30	51	70	57	64	49	35	462
0.60	64	40	29	17	27	45	69	94	71	95	67	51	671
0.50	94	52	45	28	45	64	108	117	101	137	99	81	981
0.40	145	94	69	49	70	98	140	156	148	176	137	134	1416
0.30	211	143	105	95	115	134	201	208	200	242	190	185	2029
0.20	316	222	161	165	191	195	271	281	276	314	281	268	2941
0.10	455	309	270	281	314	292	392	418	394	418	412	435	4388
≥ 0.005	716	547	531	539	535	522	609	630	621	658	657	711	7276
≤ *0.004	369	442	554	511	550	528	476	455	429	427	393	374	5508
Total No: of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

*Including rainless days.

TABLE V. Accumulated Frequencies of Daily Rainfall, 1916-1950

Settle

Daily Totals (in inches)	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	All Months
2,50													
2.40													
2.30										1			1
2.20										2			2
2.10							1		1	3			5
2.00							1		1	4	2		8
1.90							1		1	4	3	1	10
1.80		2					1		1	4	3	1	12
1.70	1	2		1			1		1	5	3	1	15
1.60	3	2	1	1	1		1	1	1	7	4	2	24
1.50	4	3	1	1	1	1	1	2	1	8	5	3	31
1.40	7	4	1	1	2	1	1	5	4	10	7	5	48
1.30	8	6	3	1	2	3	3	7	7	11	10	5	66
1.20	12	9	4	3	3	3	5	10	8	14	12	7	90
1.10	20	13	4	4	5	4	10	12	10	18	15	11	126
1.00	24	17	4	4	5	5	11	18	13	21	20	14	156
0.90	31	22	6	5	8	7	19	34	17	36	31	16	232
0.80	45	32	9	10	12	14	29	41	29	46	46	29	342
0.70	64	44	17	18	15	20	37	54	46	62	63	46	486
0.60	91	56	23	31	24	30	50	75	64	89	82	62	677
0.50	120	76	35	40	36	40	66	96	87	117	110	89	912
0.40	158	104	55	63	69	63	96	128	119	165	135	137	1294
0.30	229	151	103	103	112	88	151	183	154	220	195	194	1883
0.20	330	227	167	165	174	160	224	256	228	297	282	285	2795
0.10	443	340	278	291	286	266	353	369	348	421	404	420	4219
0.005	725	565	533	546	499	503	596	625	583	662	649	706	7192
c.004	360	424	552	504	586	547	489	460	467	423	401	379	5592
Total No. of days.	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

* Including rainless days

Table V, cont'd.

WINDERMERE, HOLEHIRD

Accumulated Frequencies of Daily Rainfall (in inches), 1916–1950

Daily Totals	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	All months
≥ 4.00							1				1		2
3.10							1				2		3
2.80		1					1		1		2		5
2.70		1					1		2		2	2	8
2.60		1					1		3		2	3	10
2.50	1	2		1			1		5		2	4	16
2.40	1	2		1			1		5	1	3	4	18
2.30	2	3		1		1	1		6	5	6	5	30
2.20	2	3		1		3	1	1	7	5	8	5	36
2.10	2	3	1	2		4	2	2	8	6	10	5	45
2.00	4	3	1	3		5	4	4	9	6	11	6	56
1.90	5	3	2	4	1	5	5	4	9	7	12	10	67
1.80	6	3	2	4	1	6	6	4	11	11	14	10	78
1.70	11	6	2	4	1	6	7	9	13	15	17	12	103
1.60	15	6	4	4	3	7	7	12	14	17	21	18	128
1.50	21	6	4	5	4	8	8	15	17	19	27	21	155
1.40	25	8	5	5	5	9	13	16	22	24	32	25	189
1.30	36	15	12	5	5	12	18	23	25	33	38	30	252
1.20	46	19	16	8	5	17	18	27	30	41	50	32	309
1.10	55	27	22	12	7	21	27	32	37	54	61	36	391
1.00	63	38	27	13	11	23	31	44	42	66	72	52	482
0.90	86	48	34	17	15	31	38	52	61	85	83	65	615
0.80	109	59	48	22	25	36	52	70	78	97	101	84	781
0.70	414	79	60	38	42	48	75	87	94	114	128	113	1292
0.60	454	111	72	58	59	67	89	114	124	153	151	142	1594
0.50	486	138	95	79	85	79	111	142	152	203	176	179	1925
0.40	543	170	121	112	121	96	153	182	202	253	233	236	2422
0.30	611	220	176	159	164	138	205	233	267	314	283	319	3089
0.20	714	294	257	224	220	197	280	333	330	385	367	422	4023
0.10	838	411	365	334	344	304	408	445	430	492	471	521	5363
≥ 0.005	857	658	655	658	619	575	699	717	706	762	753	802	8461
≤ *0.004	228	331	430	392	466	475	386	368	344	323	297	283	4323
Total No: of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	*2784

*Including rainless days

1948 and 1949 Windermere, Brockholes used (also in Table VII)

Table V, cont'd.

RAVENGLASS

Accumulated Frequencies of Daily Rainfall (in inches), 1916–1950

Daily Totals	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	All months
≥ 2.50													
2.40										1			1
2.30										1			1
2.20										1			1
2.10									2	1			3
2.00						1			3	1	1		6
1.90					1	1			3	1	2		8
1.80					1	1			3	1	2		8
1.70					1	1	2	1	5	2	2		14
1.60		1			2	1	3	2	7	2	2		20
1.50		3		1	2	1	4	4	7	2	3	1	28
1.40	1	3	2	1	2	2	4	4	7	3	3	3	35
1.30	1	4	4	2	2	2	8	5	9	4	4	4	49
1.20	6	4	4	2	2	3	8	13	14	9	7	8	80
1.10	8	6	4	2	3	4	13	14	17	10	11	9	101
1.00	11	6	5	5	6	6	16	19	22	15	17	10	138
0.90	15	12	10	6	8	11	19	26	33	25	23	13	201
0.80	26	17	13	7	13	13	29	32	42	35	31	21	279
0.70	41	25	22	14	20	19	41	45	60	59	47	37	430
0.60	56	28	31	22	30	35	57	63	76	82	68	51	599
0.50	79	44	46	35	43	58	70	85	94	103	97	83	845
0.40	124	72	72	53	66	80	110	115	116	150	144	138	1240
0.30	185	109	104	91	127	103	159	165	167	203	194	196	1806
0.20	290	181	164	154	182	164	235	231	245	294	263	287	2590
0.10	437	287	266	269	277	273	346	348	377	416	399	447	4142
≥ 0.005	661	496	486	476	472	457	555	580	562	635	606	665	6651
≤ *0.004	424	493	599	574	613	593	530	505	488	450	444	420	6133
Total No: of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

*Including rainless days.

Table V, cont'd.

CARLISLE

Accumulated Frequencies of Daily Rainfall (in inches), 1916–1950

Daily Totals	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	All mont
≥ 2.90										1			1
2.60										2			2
2.50										2			2
2.40										2			2
2.30										2			2
2.20									1	2			3
2.10								1	1	2			4
2.00								1	2	2			5
1.90								2	2	2			6
1.80							1	2	2	2			7
1.70							1	2	2	2			7
1.60							2	2	2	2			8
1.50						1	2	2	3	3			11
1.40						1	2	2	5	4			14
1.30						1	4	2	6	4			17
1.20	1	1		1		3	6	3	7	4	1		27
1.10	1	1		1	1	3	8	3	9	5	3		35
1.00	2	2		2	2	4	9	7	12	8	4		52
0.90	4	4		3	2	7	12	9	18	10	6	1	76
0.80	7	4	4	3	3	10	18	15	20	14	11	5	114
0.70	12	8	11	3	4	15	33	25	25	24	16	11	187
0.60	20	14	15	9	11	19	49	46	35	32	23	17	290
0.50	30	21	18	15	18	30	61	75	47	48	35	29	427
0.40	55	34	29	24	33	55	94	110	78	70	66	50	698
0.30	101	73	45	52	70	82	140	155	127	134	110	80	1169
0.20	169	133	105	90	133	147	201	225	198	217	176	151	1945
0.10	331	247	204	232	235	250	310	336	310	349	297	297	3398
≥ 0.005	672	537	522	536	509	514	587	627	602	659	653	665	7083
≤ *0.004	413	452	563	514	576	536	498	458	448	426	397	420	5701
Total No: of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

*Including rainless days

Table V, cont'd.

GELTSDALE

Accumulated Frequencies of Daily Rainfall (in inches), 1916-1950

Daily Totals	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	All months
≥ 2.50													
2.40													
2.30													
2.20													
2.10								1					1
2.00							1	1	1				3
1.90				1			1	2	1				5
1.80				1			1	2	1				5
1.70				1		1	2	3	1	1			9
1.60				1		1	2	3	2	2	4		15
1.50	1			1		1	3	3	2	2	4		17
1.40	1			1		1	5	3	2	3	4		20
1.30	3			2		1	5	4	2	4	4		25
1.20	4			3		6	8	6	3	7	5	1	43
1.10	5		1	3		6	10	8	4	8	6	3	54
1.00	7		5	4	1	6	13	10	10	9	6	5	76
0.90	10	3	6	5	1	7	15	17	13	11	10	6	104
0.80	13	3	9	6	5	9	21	27	20	19	13	9	154
0.70	16	7	14	9	9	15	32	40	26	30	21	16	235
0.60	27	13	19	17	19	21	44	62	40	38	33	23	356
0.50	42	28	23	23	36	35	67	85	53	58	53	42	545
0.40	72	50	39	39	57	62	105	119	91	101	81	64	880
0.30	125	88	65	73	93	97	128	172	140	156	129	108	1414
0.20	213	139	128	135	159	150	238	255	219	241	210	181	2268
0.10	387	290	259	273	263	292	371	391	372	384	351	336	3969
≥ 0.005	758	624	628	643	565	596	657	679	667	744	719	737	8017
≤ *0.004	327	365	457	407	520	454	428	406	383	341	331	348	4760
Total No: of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

*Including rainless days.

TABLE VI. Maximum and Minimum Monthly and Annual Totals of Rainfall (in inches), 1916-50, with supplementary list covering extremes for the 50-year period, 1911-60

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Bidston	Max	1948 5.73	1937 4.46	1919 4.91	1920 3.97	1924 5.22	1931 4.55	1939 6.12	1927 6.13	1918 6.39	1917 5.30	1944 5.34	1918 6.14	1924 82.60
1916-50	Min	1950 0.73	1932 0.03	1931 0.25	1938 0.22	1950 0.72	1925 0.06	1934 0.70	1947 0.29	1939 0.75	1922 0.31	1945 0.19	1933 0.58	1921 22.46
Other Extremes	Max						1958 4.69					1951 6.34		
1911-60	Min	1911 0.64			1912 0.20	1911 0.59		1911 0.47		1959 0.28				1953 21.84
Swineshaw	Max	1948 10.65	1946 7.05	1947 6.03	1949 5.36	1944 9.48	1930 7.09	1939 7.40	1931 7.07	1927 7.16	1938 7.35	1929 8.94	1919 8.03	1944 55.73
1916-50	Min	1929 2.35	1935 0.29	1931 0.30	1938 0.54	1935 0.75	1925 0.11	1943 1.43	1947 0.41	1941 0.71	1946 0.86	1945 0.61	1933 0.31	1933 33.74
Other Extremes	Max								1956 11.13	1957 8.46			1915 8.25	1954 57.40
1911-60	Min	1911 1.75			1957 0.52			1911 0.48	1959 0.39	1959 0.21				1955 32.62
Barnacre Res:	Max	1928 11.73	1937 6.54	1919 6.80	1920 5.72	1920 6.39	1928 8.80	1922 6.90	1917 9.59	1927 9.75	1938 11.13	1931 9.11	1918 9.78	1928 64.98
1916-50	Min	1941 1.55	1932 0.07	1931 0.48	1938 0.60	1928 0.96	1921 & 1941 0.63	1921 1.82	1947 0.30	1933 1.09	1946 0.64	1945 0.29	1933 0.98	1933 35.01
Other Extremes	Max		1958 6.79	1912 7.07				1960 8.49			1954 11.17	1960 9.77	1951 11.28	1954 70.92
1911-60	Min		1911 1.35					1911 1.13		1959 0.60				

TABLE VI. (contd.) Maximum and Minimum Monthly and Annual Totals of Rainfall (in inches), 1916-50, with supplementary list covering extremes for the 50-year period, 1911-60

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Settle														
1916-50	Max	1928 12.13	1937 8.18	1947 6.05	1947 5.48	1920 6.57	1928 7.16	1920 7.84	1946 8.33	1918 11.29	1916 12.18	1931 9.11	1929 10.42	1928 59.73
	Min	1941 1.21	1932 & 1934 0.28	1931 0.59	1938 0.69	1939 0.73	1925 0.10	1935 1.53	1947 0.14	1941 0.72	1947 0.93	1945 0.32	1933 0.65	1933 32.79
Other Extremes 1911-60	Max			1913 6.97	1913 5.48									1954 61.08
	Min							1911 0.61		1959 0.31				1955 30.72
Windermere														
1916-50	Max	1928 18.75	1935 10.99	1921 9.67	1947 8.14	1920 8.24	1938 8.67	1938 10.58	1917 11.90	1918 15.08	1938 16.86	1929 15.70	1924 14.76	1928 104.41
	Min	1941 1.95	1932 0.17	1944 0.79	1938 0.86	1935 0.67	1925 0.27	1917 1.87	1947 0.21	1933 1.27	1946 0.94	1945 0.46	1933 1.75	1941 50.25
Other Extremes 1911-60	Max		1915 12.84	1912 10.08	1913 8.14								1951 15.22	
	Min		1956 1.58					1911 1.07		1910 0.74				
Ravenglass														
1916-50	Max	1928 8.57	1923 7.93	1947 5.99	1923 4.82	1925 6.90	1931 6.66	1927 6.32	1943 7.90	1918 8.62	1932 8.70	1929 8.55	1929 8.36	1923 60.35
	Min	1941 1.70	1932 0.01	1944 0.40	1938 0.25	1939 0.44	1921 0.42	1919 0.92	1947 0.22	1933 1.11	1947 0.65	1945 0.28	1932 1.21	1941 34.03
Other Extremes 1911-60	Max								1956 9.21			1951 14.18	1911 9.76	
	Min			1953 0.39						1910 0.97				

TABLE VI. (contd.) Maximum and Minimum Monthly and Annual Totals of Rainfall (in inches), 1916-50, with supplementary list covering extremes for the 50-year period, 1911-60

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Carlisle														
1916-50	Max	1948 5.85	1925 4.82	1940 4.38	1947 3.71	1945 4.69	1931 5.33	1940 6.34	1923 7.42	1918 7.36	1949 7.14	1944 5.93	1949 5.69	1916 38.77
	Min	1941 0.30	1932 0.07	1929 0.41	1938 0.42	1935 0.53	1925 & 1941 0.40	1919 0.87	1947 0.16	1949 0.79	1947 0.45	1945 0.28	1926 0.65	1933 22.80
Other Extremes														
1911-60	Max								1956 8.78		1954 7.98	1951 6.03		
	Min				1912 0.42			1911 0.69		1910 0.38				1955 22.40
Geltsdale														
1916-50	Max	1948 7.48	1925 5.35	1921 5.14	1947 4.26	1945 5.47	1928 5.56	1930 7.63	1923 8.35	1927 8.10	1938 7.99	1938 6.39	1929 6.64	1928 49.90
	Min	1914 1.08	1921 0.20	1944 0.57	1938 0.59	1936 0.69	1925 0.45	1941 1.38	1947 0.11	1941 1.09	1947 0.59	1942 0.89	1933 1.12	1933 30.05
Other Extremes														
1911-60	Max		1910 5.96	1912 5.66							1954 9.13	1951 7.30	1914 7.09	1954 50.96
	Min				1912 0.45			1911 1.07		1910 0.62				

TABLE VII Maximum Daily Rainfall (in inches) 1916-50, with additional maxima for the 50-year period 1911-1960

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Widston 1916-1950		1944	1946	1947	1949	1924	1931	1926	1917	1946	1935	1940	1919
	Max	1.05	1.27	1.08	0.74	2.03	1.66	1.59	1.43	1.15	1.46	1.18	1.13
Other Extremes 1911-1960					1959				1954	1911		1954	
	Max				0.92				2.36	1.36		1.29	
Swineshaw 1916-1950		1941	1918 & 1946	1919	1949	1944	1930	1946	1922	1931	1945	1947	1947
	Max	1.68	1.50	2.00	1.50	4.50	4.10	2.36	2.08	1.55	1.61	2.47	1.40
Other Extremes 1911-1960		1954		1953	1952					1957			1915
	Max	2.29		2.20	1.64					1.62			1.96
Barnacre 1916-1950		1945	1928	1919	1923	1934	1936	1928	1943	1927	1941	1927	1936
	Max	1.60	1.72	1.67	1.34	1.43	2.63	1.74	1.76	2.65	2.10	2.00	2.15
Other Extremes 1911-1960		1954						1960	1953				
	Max	2.82						1.93	1.96				
Settle 1916-1950		1948	1950	1928	1923	1925	1928	1922	1928	1935	1941	1923	1929
	Max	1.70	1.40	1.62	1.72	1.65	1.54	1.35	1.65	1.48	2.30	2.07	1.95
Other Extremes 1911-1960								1953		1952			
	Max							1.40		1.82			

TABLE VII Maximum Daily Rainfall (in inches) 1916-50, with additional maxima for the 50-year period 1911-1960 (contd.)

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Windermere 1916-1950		1933	1920	1932	*1949	1922	1928	1938	1935	1918	1941	1931	1916
	Max	2.57	2.85	2.10	2.53	1.99	2.34	4.03	2.29	2.84	2.45	4.00	2.76
Other Extremes 1911-1960		1960					1953		1914		1911		
	Max	3.04					3.32		3.33		3.83		
Ravenglass 1916-1950		1940	1933	1937	1944	1922	1931	1932	1920	1919	1941	1926	1932
	Max	1.47	1.60	1.49	1.59	1.94	2.05	1.75	1.75	2.15	2.40	2.00	1.52
Other Extremes 1911-1960		1914							1955	1957	1956	1951	1960
	Max	1.66							3.01	2.33	2.80	3.53	2.40
Carlisle 1916-1950		1939	1925	1940	1923	1945	1930	1940	1946	1926	1949	1931	1924
	Max	1.25	1.28	0.87	1.21	1.12	1.52	1.80	2.14	2.25	2.95	1.20	0.99
Other Extremes 1911-1960		1960					1954						1952
	Max	1.52					2.13						1.32
Coltsdale 1916-1950		1939	1945	1941	1930	1941	1931	1930	1928	1940	1919	1929	1921
	Max	1.54	0.97	1.14	1.93	1.00	1.74	2.02	2.15	2.07	1.72	1.68	1.29
Other Extremes 1911-1960							1955				1954		1914
	Max						2.03				1.74		1.36

(* Taken from Brockhole)

Appendix I

River Board Areas of Cheshire, Mersey, Lancashire and Cumberland

Intense falls of Rain in 2 hours or less, 1865-1960
Extracted from British Rainfall

(Arranged chronologically, in county order).

Key at end

Year	Class	Station	Drainage area	Date	Amt. in.	D'r'n min.	Rate in/hr
Staffs.							
1903	VR	Betley Hall	1	July 18	2.53	50	3.04
1957	R	Market Drayton, Loggerheads	1	July 6	2.53	120	1.27
Derbys.							
1920	N	Whaley Bridge, Mosley Hall	1	May 27	.80	20	2.40
1923	N	" " "	1	July 31	1.10	30	2.20
1930	N	Goyt Valley, Upper Hall	1	Aug. 29	1.40	70	1.20
1939	N	Taxal,Oldfield	1	July 29	1.17	100	.70
1941	R	Formlee, Upper Hall Farm	1	June 22	1.92	90	1.28
1941	R	Taxal,Oldfield	1	June 22	1.88	90	1.25
1941	R	Buxton,Goytsclough	1	June 22	1.83	90	1.22
1941	N	" Goytshead	1	June 22	1.63	90	1.09
1944	VR	Hayfield,Kinder Filters	1	May 29	2.55	73	2.10
Cheshire							
1876	N	Macclesfield, Park Green	1	June 21	1.10	55	1.20
1881	N	Congleton,Buglawton	2	July 31	1.01	45	1.35
1882	N	Northwich,Highfield	2	July 25	1.19	120	.59
1886	VR	Sale, Brooklands	1	July 25	2.58	60	2.58
1888	N	Chelford, Astle Hall	2	Aug. 21	.63	7	5.40
1888	N	Macclesfield	1	June 9	.78	30	1.56
1891	N	Frodsham,Dunsdale	3	July 1	1.50	120	.75
1900	N	Chelford,Astle Hall	2	June 12	.55	7	4.71
1908	N	Macclesfield	1	July 14	1.16	90	.77
1921	VR	Bramhall,Bramhall Lane	1	May 12	2.00	60	2.00
1924	VR	Crewe,Isolation Hospital	2	Sep. 5	1.80	45	2.40
1927	R	Stalybridge, Brushes Filter Ho.	1	July 21	1.62	50	1.94
1927	N	Poynton,Waterloo	1	July 11	1.31	70	1.12
1930	R	Goyt Valley,Oldfield	1	Aug. 29	1.70	70	1.46
1931	N	High Lane,Lyme View	1	July 7	1.03	45	1.37
1933	N	Birkenhead, Bidston Obsy.	3	June 20	.79	30	1.58
1936	N	Knutsford,Hazelfield	1	June 21	.88	25	2.11
1936	N	Wirswall Hall	2	Sep. 3	1.48	60	1.48
1938	N	Frodsham,Castle Park	3	Aug. 5	1.10	60	1.10
1938	R	Wallasey,New Brighton	3	Aug. 9	1.80	105	1.03
1939	N	Hartford, Hollybank	2	July 16	.97	40	1.45
1939	R	Knutsford,Hazelfield	1	July 16	1.70	70	1.46

Year	Class	Station	Drainage area	Date	Amt. in.	D'r'n min.	Rate in/hr
Cheshire (cont'd)							
1940	R	Northwich, Sandiway W.W.	2	July 14	1.20	15	4.80
1940	R	Cuddington	2	July 14	1.16	15	4.64
1940	N	Northwich, Hunt's Lock	2	July 14	1.11	35	1.90
1941	R	Rainow, The Clough	1	June 22	1.82	90	1.21
1941	R	Disley, Higher Stoneridge	1	June 22	2.55	120	1.27
1941	R	Disley, Lyme Park, A	1	June 22	2.27	120	1.13
1941	R	Disley, " " B	1	June 22	2.17	120	1.09
1944	VR	Rhodes Wood Res.	1	May 29	3.05	120	1.53
1944	N	Arnfield Res.	1	May 29	1.16	73	.95
1944	R	Woodhead Res.	1	May 29	1.94	120	.97
1946	N	Arnfield Res.	1	July 26	1.67	120	.83
1946	N	Sale, Carrington Res.	1	June 23	.80	26	1.85
1952	VR	Bredbury, Sew.Wks.	1	July 1	1.73	25	4.15
1952	R	Romiley, Greave	1	July 1	1.50	30	3.00
1952	R	Arnfield Res.	1	July 1	1.03	13	4.75
1952	N	Ringway, Manchester A/pt.	1	July 1	1.04	45	1.39
1953	VR	Langley, Trentabank Res.	1	June 26	2.09	39	3.22
1954	N	Sale, Carrington Lane	1	Aug. 21	.72	23	1.88
1955	R	Congleton Sew.Wks.	2	July 12	1.20	30	2.40
1956	N	Birkenhead, Bidston Obsy.	3	July 18	.59	10	3.54
1958	N	Ringway, Manchester A/pt.	1	Aug. 22	.98	39	1.51
1958	N	High Lane, Light Alders Lane	1	Aug. 21	1.27	70	1.09
1958	N	Bidston, The Woodlands	3	Aug. 22	1.05	75	.84
1959	R	Northwich, Winnington	2	May 11	1.30	20	3.90
1959	N	Sale, Carrington Lane	1	May 10	.64	15	2.56
1959	N	Birkenhead, Bidston Obsy.	3	Aug. 9	1.00	30	2.00
Lancs. S.							
1867	R	Manchester, Friesland	3	June 10	1.60	30	3.20
1867	R	Oldham, Strinesdale	3	July 10	2.29	120	1.15
1873	N	Manchester, Old Trafford	3	June 3	1.37	120	.69
1877	N	Rochdale, Drake Street	3	July 14	.83	20	2.49
1882	N	Manchester, Stretford	3	July 1	1.01	45	1.35
1886	N	Liverpool, Walton-on-the-Hill	2	July 21	1.03	12	4.12
1886	N	Manchester, Stretford	3	Aug. 13	1.00	45	1.33
1886	R	Milnrow, Piethorne Kitcliff	3	July 25	1.88	70	1.61
1886	N	Manchester, Stretford	3	July 25	1.54	75	1.23
1888	N	Warrington, Hill Cliffe	2	July 16	1.50	120	.75
1892	R	Bolton, The Park	3	July 3	1.00	9	6.67
1892	N	Bolton, The Park	3	July 3	1.14	33	2.07
1895	R	Rochdale, Fieldhead	3	June 26	1.61	55	1.76
1895	N	Rochdale, Deeplish Hill	3	June 26	1.38	60	1.38
1897	R	Rochdale, Deeplish Hill	3	Aug. 5	1.60	40	2.40
1897	R	Rochdale, Fieldhead	3	Aug. 5	1.54	45	2.05
1897	N	Rochdale, Park Obsy.	3	Aug. 5	1.31	50	1.57
1897	R	Rochdale, " "	3	Aug. 5	1.93	75	1.54

Year	Class	Station	Drainage area	Date	Amt. in.	D'r'n min.	Rate in/hr
Lancs. S. (cont'd)							
1898	N	Manchester, Stretford	3	Aug. 8	.95	30	1.90
1900	N	" "	3	Aug. 21	1.00	30	2.00
1902	N	Ormskirk, Aughton Springs	1	May 17	1.18	60	1.18
1905	N	Rochdale, Fieldhead	3	July 9	.85	30	1.70
1906	N	Liverpool, West Derby	1	Oct. 28	1.28	50	1.54
1916	N	Blundell Sands, Myra	1	Aug. 14	1.09	30	2.18
1920	N	Leigh, Leesrigg	2	May 29	1.00	60	1.00
1921	R	Newhey, Sew. Wks.	3	Oct. 11	2.28	120	1.14
1925	N	Bolton, Queen's Park	3	May 19	.95	30	1.90
1930	N	Helmshore, Clough Ho.	3	Aug. 29	1.18	30	2.36
1930	N	Formby, The Dunes	1	Sep. 11	1.53	75	1.22
1931	N	Liverpool, Monument Place	2	Aug. 19	.78	15	3.12
1933	R	Litherland, Hatton Hill Pk.	1	June 20	1.20	30	2.40
1935	N	Liverpool, Monument Place	2	July 17	1.00	60	1.00
1936	N	Eccles, Cavendish Rd.	3	Sep. 3	.88	12	4.40
1937	N	Manchester, Oldham Rd.	3	Aug. 30	.87	30	1.74
1937	N	Liverpool, Monument Place	2	Aug. 14	.85	15	3.40
1938	R	St. Helens, Windle Hill	2	Aug. 9	1.66	80	1.25
1938	N	Kirby Estate Works	1	Aug. 6	1.61	120	.81
1938	R	Liverpool, Monument Place	2	Aug. 6	1.14	24	2.85
1947	N	Rochdale, Roch Mill S.W	3	July 16	1.05	25	2.52
1948	N	Denton Res.	4	July 31	1.22	45	1.63
1948	N	Gorton "	4	July 31	1.16	45	1.55
1949	N	Rawtenstall, Greenfold Res.	3	Sep. 24	.48	5	5.76
1950	R	Rawtenstall, Greenfold Res.	3	Aug. 23	1.70	30	3.40
1951	N	St.Helens, Eccleston Hill	2	Aug. 9	1.28	75	1.02
1951	N	Rainford, Rookery Sew. Wks.	2	Aug. 9	1.38	105	.79
1952	N	Rawtenstall, Greenfold Res.	3	Aug. 7	1.08	40	1.62
1953	N	Rochdale, Queensway	3	June 26	1.32	45	1.76
1958	N	Speke, Liverpool A/pt.	2	Aug. 20	1.15	60	1.15
1958	N	Bury, Sew. Wks.	3	Aug. 22	1.89	60	1.89
1959	N	" " "	3	May 11	.81	30	1.62
1959	R	Whitefield Park	3	June 27	2.87	105	1.35
1959	R	Liverpool, Monument Place	2	Aug. 21	1.60	23	4.17
1959	N	Rawtenstall, Greenfold Res.	3	May 11	1.03	55	1.12
1960	N	Speke, Liverpool A/pt.	2	Aug. 28	.79	30	1.58
Lancs. C.							
1878	N	Over Darwen, St.James's Vicarage	1	May 18	.68	15	2.72
1878	R	Blackburn, Whitton	1	Aug. 6	1.39	45	1.85
1893	VR	Preston, Corporation Offices	1	Aug. 10	1.25	5	15.00

Year	Class	Station	Drainage area	Date	Amt. in.	D'r'n min.	Rate in/hr
Lancs. C. (cont'd)							
1893	VR	Preston, Corporation Offices		Aug. 10	2.09	35	3.58
1893	N	Chorley, Whittle-le-Woods	2	July 10	1.35	85	.95
1920	VR	Leyland, Worden Hall	2	May 29	1.65	20	4.95
1920	R	Upholland Grammar Sch.	2	May 29	1.50	30	3.00
1930	R	Sabden, Whinns Ho.	1	June 18	2.66	120	1.33
1936	R	Leyland, Worden Hall	2	Aug. 10	1.97	95	1.24
1937	N	Stonyhurst College	1	Aug. 13	.80	30	1.60
1938	N	Chatburn School	1	Aug. 12	1.15	45	1.53
1938	N	Hutton, Lancs.C.C. Hort. Stn.	1	Aug. 12	1.15	60	1.15
1940	N	Southport, Bedford Rd. Pk.	3	July 26	.72	21	2.06
1941	R	Southport, Gosforth Rd.	3	July 12	1.83	35	3.14
1941	R	" Hesketh Park	3	July 12	1.09	15	4.36
1944	N	Darwen, Bold Venture Pk.	1	May 30	1.51	120	.75
1944	N	Southport, Bedford Rd. Pk.	3	Aug. 23	.93	50	1.12
1948	R	Southport, Hesketh Park	3	July 31	1.67	35	2.86
1950	N	Squires Gate, Blackpool A/pt.	1	Aug. 28	1.22	95	.77
1952	N	Blackburn, Whitton	1	Aug. 15	1.19	120	.59
1952	N	Southport, Bedford Rd. Pk.	3	Apr. 21	.73	20	2.19
1953	VR	Nelson, Walton Lane	1	June 26	1.72	15	6.88
1956	N	Colne, Judge Fields	1	July 27	.86	20	2.58
1956	N	Chorley, Common Bank Sew.Wks.	2	July 17	.92	45	1.23
1956	R	Squires Gate, Blackpool A/pt.	1	July 18	1.57	50	1.88
1959	N	Squires Gate, Blackpool A/pt.	1	July 27	1.56	119	.79
1960	N	Squires Gate, Blackpool A/pt.	1	Aug. 13	1.51	120	.75
Lancs. N.							
1872	N	Lancaster, Caton	4	July 12	.84	30	1.68
1872	VR	" "	4	July 26	2.50	45	3.33
1875	N	Broughton-in-Furness	1	Sep. 19	.76	10	4.56
1875	N	" " "	1	July 1	.80	20	2.40
1878	N	Cartmel, Broughton Hall	2	June 17	1.08	60	1.08
1883	R	Broughton, Woodland Rectory	1	June 25	1.95	65	1.80
1884	R	Broughton, Woodland Rectory	1	July 13	1.75	60	1.75
1884	N	Cartmel, Broughton Hall	2	July 13	1.50	85	1.06
1889	N	Broughton-in-Furness	1	June 2	.80	30	1.60
1894	N	Duddon Valley, Leathwaite Vic.	1	July 21	1.22	120	.61
1895	R	Grange, Pit Farm	2	July 26	1.25	20	3.75
1895	R	Cartmel Fell Vic.	3	July 26	1.50	60	1.50
1904	N	Cartmel, Carke	2	July 24	.76	20	2.28
1905	N	Broughton-in-Furness	1	Aug. 28	1.08	65	1.00

Year	Class	Station	Drainage area	Date	Amt. in.	D'r'n min.	Rate in/hr
Lancs. N. (cont'd)							
1907	R	Hampson-in-Ellel	4	July 21	1.50	60	1.50
1919	R	Caton School House	4	May 10	1.82	90	1.21
1922	R	Hampson-in-Ellel	4	May 21	1.13	20	3.39
1925	N	Wennington, Tatham Rec.	4	Oct. 21	.75	15	3.00
1926	R	Lancaster,Greg Obsy.	4	July 18	1.20	15	4.80
1926	N	Blackpool,Met.Obsy.	5	July 18	1.00	20	3.00
1950	N	Ulverston,Park Rd.	2	Aug. 22	1.04	56	1.11
1953	R	Newby Bridge,Fell Foot	2	June 26	2.01	60	2.01
1954	N	Morecambe	3	Sep. 10	1.26	120	.63
1958	R	Garstang,Scorton	5	July 27	1.80	60	1.80
1958	R	Barrow-in-Furness Sew. Wks.	1	May 10	1.35	40	2.03
Yorks. W.R.							
1886	N	Ingleton,Halsteads	1	July 21	.61	9	4.07
1886	N	" "	1	July 21	1.29	49	1.58
1886	R	Denshaw, New Year's Bridge	4	July 25	2.19	70	1.88
1888	N	Ingleton,Halsteads	1	July 25	1.53	75	1.22
1927	R	Greenfield,Chew Res.	4	July 21	2.05	60	2.05
1950	N	Slaidburn, Longden Brook	2	Aug. 20	.80	30	1.60
1950	N	Slaidburn, Longden Brook	2	Aug. 22	1.46	60	1.46
1959	VR	Hawes Junc., Moorland Cott.	1	May 12	2.68	105	1.53
Westmorland							
1870	N	Kirkby Stephen	1	July 9	1.50	90	1.00
1871	R	Burton	3	Aug. 18	1.45	45	1.93
1872	R	Kirkby Lonsdale, Casterton	4	June 18	1.34	18	4.47
1873	R	Ellerwater,Woodlands	2	July 22	2.45	90	1.63
1875	N	" "	2	Sep. 19	.76	20	2.28
1886	N	Shap, Copy Hill	1	July 21	1.00	60	1.00
1896	R	Kirkby Lonsdale, Barbon Manor	4	June 4	2.10	60	2.10
1897	N	Grasmere,Pavement End	2	Aug. 5	1.16	80	.87
1901	N	Patterdale, Greenside Mine	1	Aug. 10	1.45	120	.73
1904	N	Bowness,Lindeth Howe	2	July 24	1.07	45	1.43
1904	N	Windermere,Storrs Pk.	2	July 24	.99	54	1.10
1910	N	Ambleside,Wansfell	2	June 10	1.52	75	1.22
1914	R	Kirkby Lonsdale, Casterton	4	July 21	1.50	20	4.50
1916	N	Kendal, Holmcroft	3	July 21	.80	20	2.40
1916	N	" Birchfield	3	July 21	1.00	32	1.87
1927	N	Penrith,Lowther Cas.	1	July 28	.88	20	2.64
1927	N	Grasmere,The Wray	2	July 14	1.51	90	1.00
1938	N	Kendal,Crosthwaite Low Fell	3	Aug. 12	1.08	55	1.18
1947	VR	Temple Sowerby	1	July 18	2.24	60	2.24
1953	VR	Windermere,Holehird	2	June 26	2.84	55	3.10
1953	R	" Brockhole	2	June 26	2.32	90	1.55
1953	R	Ambleside	2	June 26	2.15	90	1.43
1953	N	Rydal, The Hall	2	June 26	1.28	120	.64
1953	N	Great Langdale,Long Ho.	2	Sep. 30	1.24	120	.62

Year	Class	Station	Drainage area	Date	Amt. in.	D'r'n min.	Rate in/hr
Westmorland (cont'd)							
1956	N	Great Langdale,Long Ho.	2	June 11	1.12	27	2.49
Cumberland							
1893	N	Duddon Valley, Ulpha Vic.	4	June 7	.70	20	2.10
1894	N	Whitehaven,Irish St.	3	July 6	.85	15	3.40
1895	N	Cockermouth, Whinfield Hall	2	May 24	1.24	60	1.24
1897	N	Penrith,Greystoke	1	Aug. 5	.88	30	1.76
1900	N	Workington,Winscales	3	June 12	.80	20	2.40
1901	N	Brampton,Denton Ho.	1	Aug. 10	1.31	90	.87
1904	R	Keswick,Old Hall	2	July 27	2.55	105	1.46
1910	R	Penton,Warwicksland School	1	June 10	2.05	90	1.37
1915	VR	Carlisle,Scaleby Hall	1	Aug. 12	2.75	90	1.83
1926	N	Renwick,Ravenwood	1	June 30	1.12	40	1.68
1927	R	Keswick, Lingholm Gdns.	2	July 10	1.65	45	2.20
1930	R	Beckfoot,Eskdale Vic.	3	June 9	1.34	30	2.68
1947	N	Penrith,Hutton John	1	May 30	.92	20	2.76
1947	N	Watermillock,Lake View	1	May 30	.84	30	1.68
1949	N	Caldbeck,Upton School	1	June 1	.79	30	1.58
1953	N	Watermillock,Lake View	1	June 26	1.40	120	.70
1954	VR	Ulpha	4	Oct. 18	1.75	25	4.20
1954	N	Ulpha	4	Nov. 11	1.19	70	1.02
1956	N	Penrith, Arthur St.	1	June 23	.59	10	3.54
1958	N	Keswick,High Hill	2	Aug. 10	1.42	60	1.42

Key. N. = Noteworthy
R. = Remarkable
VR. = Very Rare

Staffordshire	1	Mersey-Weaver
Derbyshire	1	Mersey, Upper
	2	Mersey-Weaver
Cheshire	1	Mersey, Upper
	2	Mersey-Weaver
	3	Mersey, Lower
Lancashire S.	1	Alt & C
	2	Mersey, Lower
	3	Mersey-Irwell
	4	Mersey, Upper
Lancashire C.	1	Ribble & C
	2	Ribble-Douglas
	3	Coast streams
Lancashire N.	1	Duddon & C
	2	Leven & C
	3	Kent & C
Lancashire N. (cont'd)	4	Lune
	5	Wyre & C
	6	Insular
Yorkshire W.R.	1	Lune
	2	Ribble
	3	Mersey-Irwell
	4	Mersey, Upper
Westmorland	1	Eden
	2	Leven
	3	Kent
	4	Lune
Cumberland	1	Eden and Solway
	2	Derwent
	3	West Coast Streams
	4	Duddon & C

Appendix II

Falls of 5.00 in. or more in the rainfall day, 9 a.m. to 9 a.m., 1865-1960

Extracted from British Rainfall

Accounts of the heavy rains are in the relevant volumes of British Rainfall.

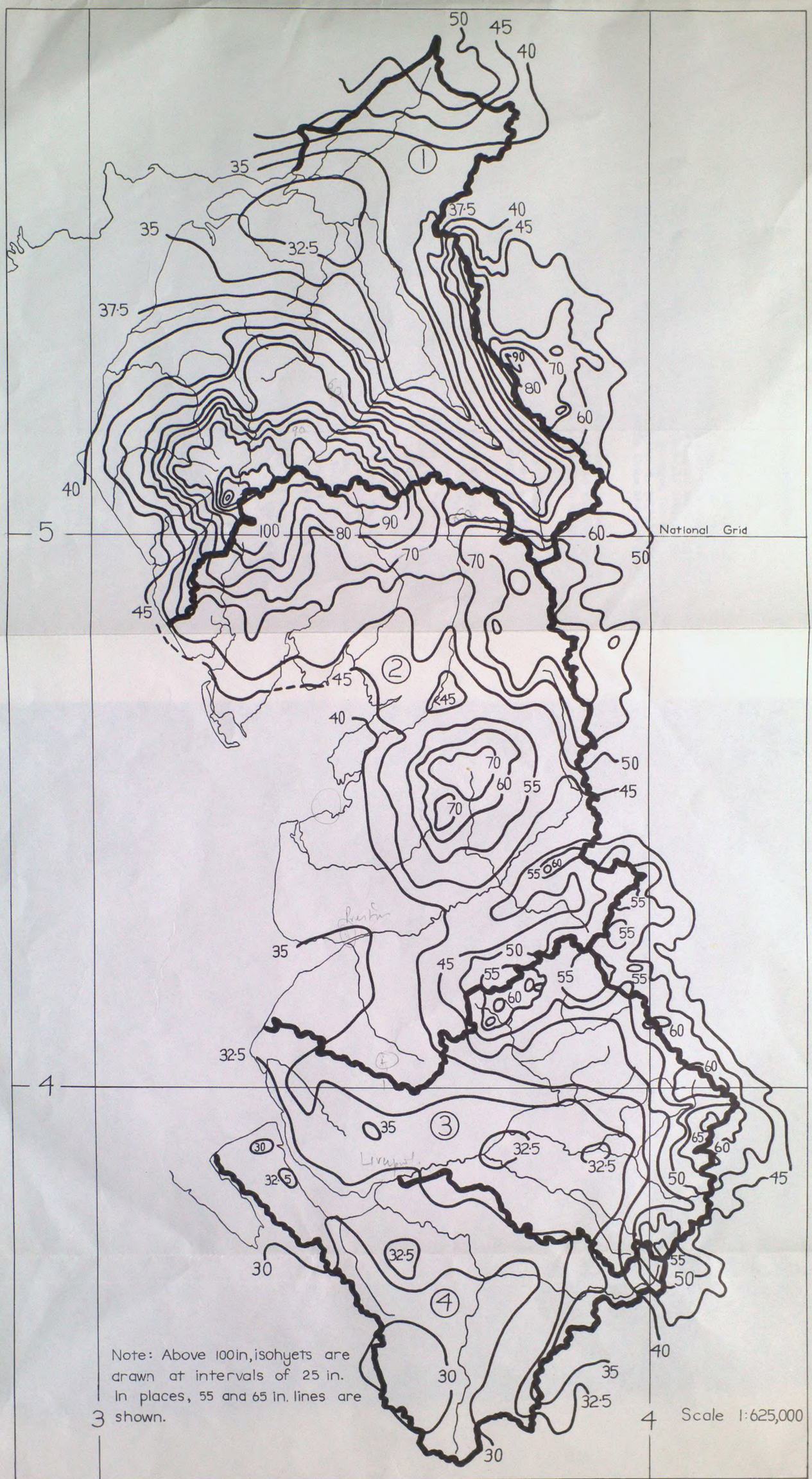
Year	Station	Date	Amount (in.)
Lancs. N.			
1897	Skelwith Fold	Nov. 12	6.03
1931	" "	Nov. 3	5.30
1938	Coniston, School Garden	July 29	6.06
"	" Holywath	" 29	6.06
"	" Thwaite Cottage	" 29	5.47
1953	" Holywath	Sep. 30	5.18
1960	Slaidburn, Hareden Valley	Feb. 2	5.07
"	" Langden Brook	" 2	5.03
Westmorland			
1869	Langdale Brigg	Nov. 13	5.55
1897	Skelwith Bridge	" 12	6.35
"	Dungeon Ghyll	" 12	5.90
1901	" "	" 19	5.66
"	Elterwater Hall	" 19	5.27
1904	Skelwith Bridge	" 8	5.62
"	Elterwater Hall	" 8	5.58
1912	Grasmere, The Wray	Dec. 13	5.14
1916	Dungeon Ghyll	" 28	5.10
1920	" "	Feb. 9	6.81
"	Grasmere, The Wray	" 9	5.12
1921	" "	Jan. 8	6.10
"	Patterdale, Greenside Mine	Nov. 3	5.26
1924	" " "	Dec. 26	5.00
1931	Rydal, Stepping Stones	Nov. 3	5.41
"	Grasmere, The Wray	" 3	5.28
"	Rydal, The Hall	" 3	5.23
1935	New Dungeon Ghyll Hotel	Feb. 15	6.16
1938	Kentmere Head Res.	July 29	5.80
"	New Dungeon Ghyll Hotel	" 29	5.05
1953	Great Langdale, Long Ho.	Sep. 30	5.05
1960	Great Langdale, Copt Howe	Feb. 2	5.03
Cumberland			
1864	Borrowdale, Seathwaite	Dec. 4	6.47
1865	" "	May 30	6.41
1866	" "	Nov. 16	6.38
1869	" "	" 13	6.70
1872	" "	Jan. 17	5.82
1874	" "	Oct. 6	5.14
1884	" "	May 8	6.78
1888	Wythburn Vicarage	Oct. 27	5.20
1890	Borrowdale, Seathwaite	Sep. 30	6.79
"	Rosthwaite	" 30	5.33
1891	Borrowdale, Seathwaite	Aug. 24	6.14
"	Wythburn Vicarage	" 24	5.28

Appendix II, cont'd.

Year	Station	Date	Amount (in.)
Cumberland (cont'd)			
1892	Borrowdale, Seathwaite	Sep. 18	5.80
1897	" "	Nov. 12	8.03
"	Rosthwaite	" 12	6.94
"	Borrowdale, Grange	" 12	5.93
1898	" Seathwaite	Nov. 1	5.20
"	Rosthwaite	" 1	5.12
1899	Borrowdale, Grange	Jan. 18	5.21
1900	" Seathwaite	Dec. 14	5.32
"	" Grange	Feb. 15	5.06
1906	" Seathwaite	Jan. 28	6.15
1911	" "	Oct. 29	7.00
"	" Grange	" 29	5.06
1912	" Seathwaite	Dec. 13	5.70
1918	Buttermere, Hassness	Oct. 3	5.35
1924	" "	Dec. 26	6.05
1931	Borrowdale, The Moraine	Nov. 3	5.24
"	Keswick, Lingholm Gardens	" 3	5.05
1932	Borrowdale, The Moraine	Dec. 16	5.18
193?	Buttermere, Hassness	Jan. 31	5.50
1936	Watendlath Farm	Oct. 24	5.30
1938	Buttermere, Hassness	July 29	7.14
"	Watendlath Farm	" 29	5.95
"	Borrowdale, The Moraine	" 29	5.60
1942	Grange-in-Borrowdale, Beild	Sep. 4	5.33
"	Borrowdale, The Moraine	" 4	5.08

Fig 1. Average Monthly Rainfall, as Percentage of Average Annual Rainfall, 1916–1950, January to June

Fig 1. Average Monthly Rainfall, as Percentage of Average Annual Rainfall, 1916–1950, July to December



AVERAGE ANNUAL RAINFALL 1916–1950, (in inches) over the River Board areas of :-

① Cumberland.
② Lancashire.
③ Mersey
④ Cheshire

Fig 2.